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MEDICAL INQUIRIES

AND

OBSERVATIONS.

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CONTENTS OF VOLUME III.

	page
OUTLINES of a theory of fever	1
An account of the bilious yellow fever, as it appeared in Philadelphia in 1793	67
An account of the bilious yellow fever, as it appeared in Philadelphia in 1794	355
An account of sporadic cases of bilious yellow fever, as they appeared in Philadelphia in 1795 *and* 1796	435

OUTLINES

OF A

THEORY OF FEVER.

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OF A

THEORY OF FEVER.

AS many of the diseases which are the subjects of these volumes belong to the class of fevers, the following remarks upon their theory are intended to render the principles and language I have adopted, in the history of their causes, symptoms, and cure, intelligible to the reader.

I am aware that this theory will suffer by being published in a detached state from the general view of the proximate cause of disease which I have taught in my lectures upon pathology, as well as from its being deprived of that support which it would receive from being accompanied with an account of the remedies for fever, and the times and

manner of exhibiting them, all of which would have served to illustrate and establish the facts and reasonings which are to follow upon this difficult and interesting inquiry.

I shall not attempt to give a definition of fever. It appears in so many different forms, that a just view of it can only be given in a minute detail of all its symptoms and states.

In order to render the theory, which I am about to deliver, more simple and intelligible, it will be necessary to premise a few general propositions.

I. Fevers of all kinds are preceded by general debility. This debility is natural or accidental. The former is the effect of the sanguineous temperament, and exists at all times in many constitutions. The latter is induced,

1. By such preternatural or unusual stimuli, as, after first elevating the excitement of the system above its healthy grade, and thereby wasting a part of its strength, or what Dr. Brown calls excitability, and Darwin sensorial power, afterwards reduces it down to that state which I shall call debility of action. Or,

2. It is induced by such an abstraction of natural stimuli as to reduce the system *below* its healthy grade of excitement, and thereby to induce what Dr. Brown calls *direct* debility, but what I shall call debility from abstraction. This general debility is the same, whether brought on by the former or the latter causes. When induced by the latter, the system becomes more excitable than when induced by the former causes, and hence an attack of fever is more frequently invited by it, than by that state of debility which succeeds the application of an undue portion of stimulating powers. To this there is an exception, and that is, when the remote causes of fever act with so much force and rapidity as *suddenly* to depress the system, without an intermediate elevation of it, and before sufficient time is given to expend any part of its strength or excitability, or to produce the debility of action. The system in this state, is exactly similar to that which arises from a sudden reduction of its healthy excitement, by the abstraction of stimuli. This debility from abstraction, moreover, is upon a footing with the debility from action, when it is of a *chronic* nature. They both alike expend so much of the quality or substance of excitability, as to leave the system in a state in which irritants are seldom able to excite the commotions of fever, and when they do, it is of a feeble nature, and hence

we observe persons who have been long exposed to debilitating causes of both kinds, often escape fevers, while those who are *recently* debilitated, are affected by them, under the same circumstances of exposure to those causes.

That fevers are preceded by general debility I infer from their causes, all of which act by reducing the excitement of the system, by the abstraction of stimuli, or by their excessive or unusual application. The causes which operate in the former way are,

1. Cold. This is universally acknowledged to be a predisposing cause of fever. That it debilitates, I infer, 1. From the languor which is observed in the inhabitants of cold countries, and from the weakness which is felt in labour or exercise in cold weather. 2. From the effects of experiments, which prove, that cold air and cold water lessen the force and frequency of the pulse.

2. The debilitating passions of fear, grief, and despair.

3. All excessive evacuations, whether by the bowels, blood-vessels, pores, or urinary passages.

4. Famine, or the abstraction of the usual quantity of nourishing food.

The causes which predispose to fever by the excessive or unusual application of stimuli are,

1. Heat. Hence the greater frequency of fevers in warm climates, and in warm weather.

2. Intemperance in eating and drinking.

3. Unusual labour or exercise.

4. Violent emotions, and stimulating passions of the mind.

5. Certain causes which act by over-stretching a part, or the whole of the body, such as lifting heavy weights, external violence acting mechanically in wounding, bruising, or compressing particular parts, extraneous substances acting by their bulk or gravity, burning, and the like*. The influence of debility in predisposing to fevers is further evident from their attacking so often in the night, a time when the system is more weak than at any other, in the four and twenty hours.

* Cullen's First Lines.

II. Debility being thus formed in the system, by the causes which have been enumerated, a *sudden* accumulation of excitability takes place, whereby a predisposition is created to fever. The French writers have lately called this predisposition "vibratility," by which they mean a liableness in it to be thrown into vibrations or motions, from pre-existing debility. It is not always necessary that a fever should follow this state of predisposition. Many people pass days and weeks under it, without being attacked by a fever, by carefully or accidentally avoiding the application of additional stimuli or irritants to their bodies: but the space between this state of predisposition, when it is recent, and a fever, is a very small one; for, independently of additional stimuli, the common impressions which support life sometimes become irritants, and readily add another link to the chain of causes which induce fever, and that is,

III. Depression of the whole system, or what Dr. Brown calls indirect debility. It manifests itself in weakness of the limbs, inability to stand or walk without pain, or a sense of fatigue, a dry, cool, or cold skin, chilliness, a shrinking of the hands and face, and a weak or quick pulse. These symptoms characterize what I have called in my lectures the forming state of fever. It is not ne-

cessary that a paroxysm of fever should follow this depressed state of the system, any more than the debility that has been described. Many people, by rest, or by means of gentle remedies, prevent its formation; but where these are neglected, and the action of stimuli, whether morbid or natural, are continued,

IV. Re-action is induced, and in this re-action, according to its greater or less force and extent, consist the different degrees of fever. It is of an irregular or a *convulsive* nature. In common cases, it is seated primarily in the blood-vessels, and particularly in the arteries. These pervade every part of the body. They terminate upon its whole surface, in which I include the lungs and alimentary canal, as well as the skin. They are the outposts of the system, in consequence of which they are most exposed to cold, heat, intemperance, and all the other external and internal, remote and exciting causes of fever, and are first roused into resistance by them.

Let it not be thought, from these allusions, that I admit Dr. Cullen's supposed vires naturæ medicatrices to have the least agency in this re-action of the blood-vessels. I believe it to be altogether the effect of their elastic and muscular texture, and

that it is as simply mechanical as motion from impressions upon other kinds of matter.

That the blood-vessels possess muscular fibres, and that their irritability or disposition to motion depends upon them, has been demonstrated by Dr. Vasschuer and Mr. John Hunter, by many experiments. It has since been proved by Spallanzani, in an attempt to refute it. Even Dr. Haller, who denies the muscularity and irritability of the blood-vessels, implies an assent to them in the following words: "There are nerves which descend for a long way together through the surface of the artery, and at last vanish in the cellular substance of the vessel, of which we have a specimen in the external and internal carotids, and in the arch of the aorta; and from these do not the arteries seem to derive a muscular and convulsive force very different from that of their simple elasticity? Does not it show itself plainly in *fevers*, faintings, palsies, consumptions, and passions of the mind*?"

The re-action or morbid excitement of the arteries discovers itself in preternatural force, or frequency in their pulsations. In *ordinary* fe-

* First Lines, sect. 32 of the chapter on arteries.

ver, it is *equally* diffused throughout the whole sanguiferous system, for the heart and arteries are so intimately connected, that, like the bells of the Jewish high-priest, when one of them is touched, they all vibrate in unison with each other. To this remark there are some exceptions.

1. The arteries are sometimes affected with great morbid excitement, while the natural functions of the heart are unimpaired. This occurs in those states of fever in which patients are able to sit up, and even to walk about, as in pulmonary consumption, and in hectic fever from all its causes.

2. The heart and pulmonary artery are sometimes affected with great morbid excitement, while the pulsations of the arteries on the wrists are perfectly natural.

3. The morbid excitement of the arteries is sometimes greater on one side of the body than on the other. This is obvious in the difference in the number and force of the pulsations in the different arms, and in the different and opposite appearances of the blood drawn from their veins, under equal circumstances.

4. The arteries in the head, lungs, and abdominal viscera are sometimes excited in a high degree, while the arteries in the extremities exhibit marks of a feeble morbid action. Fevers attended with these and other deviations from their common phenomena, have been called by Dr. Alibert, *altaxiques*. They occur most frequently in malignant fevers.

While morbid excitement thus pervades generally or partially the sanguiferous system, depression and debility are increased in the alimentary canal, and in the nervous and muscular systems. In the stomach, bowels, and muscles, this debility is occasioned by their excitement being abstracted, and translated to the blood-vessels.

I shall now endeavour to illustrate the propositions which have been delivered, by taking notice of the manner in which fevers are produced by some of its most obvious and common causes.

Has the body been debilitated by exposure to the cold air? its excitability is thereby increased, and heat acts upon it with an accumulated force: hence the frequency of catarrhs, pleurisies, and other inflammatory fevers in the spring, after a cold winter; and of bilious remittents in the autumn, when

warm days succeed to cold and damp nights. These diseases are seldom felt for the first time in the open air, but generally after the body has been exposed to cold, and afterwards to the heat of a warm room or a warm bed. Mild intermittents have frequently been observed to acquire an inflammatory type in the Pennsylvania hospital, in the months of November and December, from the heat of the stove rooms acting upon bodies previously debilitated and rendered excitable by cold and disease.

Has there been an abstraction of heat by a sudden shifting of the wind from the south-west to the north-west or north-east points of the compass, or by a cold night succeeding to a warm day? a fever is thereby frequently excited. These sources of fever occur every autumn in Philadelphia. The miasmata which exist in the body at that time in a harmless state, are excited into action, in a manner to be mentioned presently, by the debility from cold, aided in the latter case by the inaction of sleep, suddenly induced upon the system.

Again: has the body been *suddenly* debilitated by labour or exercise? its excitement is thereby diminished, but its excitability is increased in such a manner that a full meal, or an intemperate glass

of wine, if taken *immediately* after the fatigue is induced upon the body, excites a fever: hence the frequency of fevers in persons upon their return from hunting, surveying, long rides, or from a camp life.

But how shall we account for the production of fever from the measles and small-pox, which attack so uniformly, and without predisposing debility from any of its causes which have been enumerated? I answer, that the contagions of those diseases seldom act so as to produce fever, until the system is first depressed. This is obvious from their being preceded by languor, and all the other symptoms formerly mentioned, which constitute the forming state of fever. The miasmata which induce the plague and yellow fever, when they are not preceded by the usual debilitating and predisposing causes, generally induce the same depression of the system, previously to their exciting fever. Even wounds, and other local irritants seldom induce fever before they have first produced the symptoms of depression formerly mentioned. I shall presently mention the exceptions to this mode of producing fever from contagious miasmata and local injuries, and show that they do not militate against the truth of the general proposition that has been delivered.

It may serve still further to throw light upon this part of our subject to take notice of the difference between the action of stimuli upon the body predisposed by debility and excitability to fever, and their action upon it when there is no such predisposition to fever.

In health there is a constant and just proportion between the degrees of excitement and excitability, and the force of stimuli. But this is not the case in a predisposition to a fever. The ratio between the action of stimuli and excitement, and excitability is destroyed; and hence the former act upon the latter with a force which produces irregular action, or a convulsion in the arterial system. When the body is debilitated, and its excitability increased, either by fear, darkness, or silence, a sudden noise occasions a short convulsion. We awake, in like manner, in a light convulsion, from the sudden opening of a door, or from the sprinkling of a few drops of water in the face, after the excitability of the system has been accumulated by a night's sleep. In a word, it seems to be a law of the system, that stimulus, in an over-proportion to excitability, either produces convulsion, or goes so far beyond it, as to destroy motion altogether in death.

V. There is but one exciting cause of fever, and that is stimulus. Heat, alternating with cold*, marsh and human miasmata, contagions and poisons of all kinds, intemperance, passions of the mind, bruises, burns, and the like, all act by a stimulating power only, in producing fever. This proposition is of great application, inasmuch as it cuts the sinews of the division of diseases from their remote causes. Thus it establishes the sameness of a pleurisy, whether it be excited by heat succeeding cold, or by the contagions of the small-pox and measles, or by the miasmata of the yellow fever.

To this proposition there is a seeming objection. Cold, sleep, immoderate evacuations, and the debilitating passions of grief and fear (all of which abstract excitement) appear to induce fever without the interposition of a stimulus. In all these cases, the *sudden* abstraction of excitement destroys the equilibrium of the system, by which means the blood is diverted from its natural channels, and by

* Perhaps there is no greater enemy to the life of man than cold. Dr. Sydenham ascribes nearly all fevers to it, particularly to leaving off winter clothes too soon, and to exposing the body to cold after it has been heated. These sources of fever, he adds, destroy more than the plague, sword, or famine.—*Wallis's edition, vol. I. p.* 357.

acting with preternatural force in its new directions, becomes an irritant to the blood-vessels, and thus a stimulating and exciting cause of fever. When it is induced by cold alone, it is probable so much of the perspirable matter may be retained as to co-operate, by its irritating qualities, in exciting the fever.

VI. There is but one fever. However different the predisposing, remote, or exciting causes of fever may be, whether debility from abstraction or action, whether heat or cold succeeding to each other, whether marsh or human miasmata, whether intemperance, a fright, or a fall, still I repeat, there can be but one fever. I found this proposition upon all the supposed variety of fevers having but one proximate cause. Thus fire is a unit, whether it be produced by friction, percussion, electricity, fermentation, or by a piece of wood or coal in a state of inflammation.

VII. All ordinary fever being seated in the blood-vessels, it follows, of course, that all those local affections we call pleurisy, angina, phrenitis, internal dropsy of the brain, pulmonary consumption, and inflammation of the liver, stomach, bowels, and limbs, are symptoms only of an original and primary disease in the sanguiferous system. The truth of this proposition is obvious from the

above local affections succeeding primary fever, and from their alternating so frequently with each other. I except from this remark those cases of primary affections of the viscera which are produced by local injuries, and which, after a while, bring the whole sanguiferous system into sympathy. These cases are uncommon, amounting, probably, to not more than one in a hundred of all the cases of local affection which occur in general fever.

In my 4th proposition I have called the action of the arteries *irregular* in fever, to distinguish it from that excess of action which takes place after violent exercise, and from that quickness which accompanies fear or any other directly debilitating cause. The action of the arteries here is *regular*, and, when felt in the pulse, affords a very different sensation from that *jerking* which we feel in the pulse of a patient labouring under a fever.

This irregular action is, in other words, a *convulsion* in the sanguiferous, but more obviously, in the arterial system.

That this is the case I infer from the strict analogy between symptoms of fever, and convulsions in the nervous system. I shall briefly mention the particulars in which this analogy takes place.

1. Are convulsions in the nervous system preceded by debility? So is the convulsion of the blood-vessels in fever.

2. Does debility induced on the whole, or on a part only, of the nervous system, predispose to general convulsions, as in tetanus? So we observe debility, whether it be induced on the whole or on a part of the arterial system, predisposes to general fever. This is obvious in the fever which ensues alike from cold applied to every part of the body, or from a stream of cold air falling upon the neck, or from the wetting of the feet.

3. Do tremors precede convulsions in the nervous system? So they do the convulsion of the blood-vessels in fever.

4. Is a coldness in the extremities a precursor of convulsions in the nervous system? So it is of fever.

5. Do convulsions in the nervous system impart a jerking sensation to the fingers? So does the convulsion of fever in the arteries, when felt at the wrists.

6. Are convulsions in the nervous system attended with alternate action and remission? So is the convulsion of fever.

7. Do convulsions in the nervous system return at regular and irregular periods? So does fever.

8. Do convulsions in the nervous system, under certain circumstances, affect the functions of the brain? So do certain states of fever.

9. Are there certain convulsions in the nervous system which affect the limbs, without affecting the functions of the brain, such as tetanus, and chorea sancti viti? So there are certain fevers, particularly the common hectic, which seldom produces delirium, or even head-ach, and frequently does not confine a patient to his bed.

10. Are there local convulsions in the nervous system, as in the hands, feet, neck, and eye-lids? So there are local fevers. Intermittents often appear in the autumn with periodical heat and pains in the eyes, ears, jaws, and back.

11. Are there certain grades in the convulsions of the nervous system, as appears in the hydrophobia, tetanus, epilepsy, hysteria, and hypochondria-

sis? So there are grades in fevers, as in the plague, yellow fever, small-pox, rheumatism, and common remitting and intermitting fevers.

12 Are nervous convulsions most apt to occur in infancy? So are fevers.

13. Are persons once affected with nervous convulsions frequently subject to them through life? So are persons once affected with fever. The intermitting fever often returns with successive springs or autumns, and, in spite of the bark, sometimes continues for many years in all climates and seasons.

14. Is the strength of the nervous system increased by convulsions? This is so evident that it often requires four or five persons to confine a delicate woman to her bed in a convulsive fit. In like manner the strength of the arterial system is increased in a fever. This strength is great in proportion to the weakness of every other part of the body.

15. Do we observe certain nervous convulsions to affect some parts of the nervous system more than others, or, in other words, do we observe preternatural strength or excitement to exist in one

part of the nervous system, while other parts of the same system exhibit marks of preternatural weakness or defect of excitement? We observe the same thing in the blood-vessels in a fever. The pulse at the wrist is often *tense*, while the force of the heart is very much diminished. A delirium often occurs in a fever from excess of excitement in the blood-vessels of the brain, while the pulse at the wrist exhibits every mark of preternatural weakness.

16. Is there a rigidity of the muscles in certain nervous diseases, as in catalepsy? Something like this solstice in convulsion occurs in that state of fever in which the pulse beats but sixty, or fewer strokes in a minute.

17. Do convulsions go off *gradually* from the nervous system, as in tetanus, and chorea sancti viti? So they do from the arterial blood-vessels in certain states of fever.

18. Do convulsions go off *suddenly* in any cases from the nervous system? The convulsion in the blood-vessels goes off in the same manner by a sweat, or by a hæmorrhage, frequently in the course of a night, and sometimes in a single hour.

19. Does palsy in some instances succeed to convulsions in the nervous system? Something like a palsy occurs in fevers of great inflammatory action in the arteries. They are often inactive in the wrists, and in other parts of the body, from the immense pressure of the remote cause of the fever upon them.

From the facts and analogies which have been mentioned, I have been led to conclude that the common forms of fever are occasioned simply by irregular action, or convulsion in the blood-vessels.

The history of the phenomena of fever, as delivered in the foregoing pages, resolves itself into a chain, consisting of the five following links.

1. Debility from action, or the abstraction of stimuli. When this debility is induced by action, it is sometimes preceded by elevated excitement in the blood-vessels, from the first impressions of stimuli upon them.

2. An increase of their excitability.

3. Stimulating powers applied to them.

4. Depression. And,

5. Irregular action or convulsion.

The whole of the links of this chain are perceptible only when the fever comes on in a *gradual* manner. But I wish the reader to remember, that the same remote cause is often debilitating, stimulating, and depressing, and that, in certain fevers, the remote cause sometimes excites convulsions in the blood-vessels without being preceded by preternatural debility and excitability, and with but little or no depression of the system. This has often been observed in persons who have been suddenly exposed to those marsh and human miasmata which produce malignant fevers. It sometimes takes place likewise in fevers induced by local injuries. The blood-vessels in these cases are, as it were, taken by storm, instead of regular approaches.

I might digress here, and show that all diseases, whether they be seated in the arteries, muscles, nerves, brain, or alimentary canal, are all preceded by debility; and that their essence consists in irregular action, or in the absence of the natural order of motion, produced or invited by predisposing debility. I might further show, that all the moral, as well as physical evil of the world consists in predisposing weakness, and in subsequent derangement

of action or motion; but these collateral subjects are foreign to our present inquiry.

Let us now proceed to examine how far the theory which has been delivered accords with the phenomena of fever.

I shall divide these phenomena into two kinds.

I. Such as are transient, and more or less common to all fevers. These I shall call *symptoms* of fever.

II. Such as, being more permanent and fixed, have given rise to certain specific names. These I shall call *states* of fever.

I shall endeavour to explain and describe each of them in the order in which they have been mentioned.

I. Lassitude is the effect of the depression of the whole system, which precedes fever.

The same cause, when it acts upon the extremities of the blood-vessels, produces coldness and chills. This is obvious to any person, under the first impression of the miasmata which bring on

fevers, also under the influence of fatigue, and debilitating passions of the mind. The absence of chills indicates the sensibility of the external parts of the body to be suspended or destroyed, as well as their irritability; hence when death occurs in the fit of an intermittent, there is no chill. A chilly fit, for the same reason, seldom occurs in the most malignant cases of fever. It is sometimes excited by blood-letting, only because it weakens those fevers to such a degree, as to carry the blood-vessels back to the grade of depression. Coldness and chills are likewise removed by blood-letting, only because it enables the arteries to re-act in such a manner as to overcome the depression that induced it. It has been remarked, that the chilly fit, in common fevers, seldom appears in its full force until the patient approaches a fire, or lies down on a warm bed; for in these situations sensibility is restored by the stimulus of the heat acting upon the extremities of the blood-vessels. The first impressions of the rays of the sun, in like manner, often produce coldness and chills in the torpid bodies of old and weakly people.

Tremors are the natural consequence of the abstraction of that support which the muscles receive from the fulness and tension of the blood-vessels. It is from this retreat of the blood towards the vis-

cera, that the capillary arteries lose their fulness and tension; hence they contract like other soft tubes that are emptied of their contents. This contraction has been called a spasm, and has improperly been supposed to be the proximate cause of fever. From the explanation that has been given of its cause, it appears, like the coldness and chills, to be nothing but an accidental concomitant, or effect of a paroxysm of fever.

The local pains in the head, breast, and bones in fever, appear to be the effects of the irregular determination of the blood to those parts, and to morbid action being thereby induced in them.

The want of appetite and costiveness are the consequences of a defect of secretion of the gastric juice, and the abstraction of excitement or natural action from the stomach and bowels.

The inability to rise out of bed, and to walk, is the effect of the abstraction of excitement from the muscles of the lower limbs.

The dry skin or partial sweats appear to depend upon diminished or partial action in the vessels which terminate on the surface of the body.

The high-coloured and pale urine are occasioned by an excess or a deficiency of excitement in the secretory vessels of the kidneys.

The suppression of the urine seems to arise from what Dr. Clark calls an engorgement, or choaking of the vessels of the kidneys. It occurs most frequently in malignant fevers.

Thirst is probably the effect of a preternatural excitement of the vessels of the fauces. It is by no means a uniform symptom of fever. We sometimes observe it, in the highest degree, in the last stage of diseases, induced by the retreat of the last remains of excitement from every part of the body, to the throat.

The white tongue is produced by a change in the secretion which takes place in that organ. Its yellow colour is the effect of bile; its dryness is occasioned by an obstruction of secretion, or by the want of action in the absorbents; and its dark and black colour, by a tendency to mortification.

It will be difficult to account for the variety in the degrees and locality of *heat* in the body in a fever, until we know more of the cause of animal

heat. From whatever cause it be derived, its excess and deficiency, as well as all its intermediate degrees, are intimately connected with more or less excitement in the arterial system. It is not necessary that this excitement should exist only in the large blood-vessels. It will be sufficient for the purpose of creating great heat, if it occur only in the cutaneous vessels; hence we find a hot skin in some cases of malignant fever in which there is an absence of pulse.

Eruptions seem to depend upon effusions of serum, lymph, or red blood upon the skin, with or without inflammation, in the cutaneous vessels.

I decline taking notice in this place of the symptoms which are produced by the debility from action and abstraction, and by the depression of the system. They appear not only in the temperature of the body, but in all the different symptoms of fever. It is of importance to know when they originate from the former, and when from the latter causes, as they sometimes require very different and opposite remedies to remove them.

It remains only to explain the cause why excess in the force or frequency of the action of the blood-

vessels should succeed debility in a part, or in the whole of the body, and be connected for days and weeks with depression and preternatural debility in the nerves, brain, muscles, and alimentary canal. I shall attempt the explanation of this phenomenon by directing the attention of the reader to the operations of nature in other parts of her works.

1. A calm may be considered as a state of debility in the atmosphere. It predisposes to a current of air. But is this current proportioned to the loss of the equilibrium of the air? By no means. It is excessive in its force, and tends thereby to destroy the works both of nature and art.

2. The passions are given to man on purpose to aid the slow and uncertain operations of reason. But is their action always proportioned to the causes which excite them? An acute pneumony, brought on by the trifling injury done to the system by the fatigue and heat of an evening spent in a dancing assembly, is but a faint representation of the immense disproportion between a trifling affront, and that excess of passion which seeks for gratification in poison, assassination, or a duel.

The same disproportion appears between cause and effect in public bodies. A hasty word, of no mischievous influence, has often produced convulsions, and even revolutions, in states and empires.

If we return to the human body we shall find in it many other instances of the disproportion between stimulus and action, besides that which takes place in the excitement of fever.

3. A single castor oil nut, although rejected by the stomach upon its first effort in vomiting, has, in one instance that came within my knowledge, produced a vomiting that continued nearly four and twenty hours. Here the duration of action was far beyond all kind of proportion to the cause which excited it.

4. A grain of sand, after being washed from the eye, is often followed by such an inflammation or excess in the action of the vessels of the eye, as to require bleeding, purging, and blistering to remove it.

Could we comprehend every part of the sublime and ineffable system of the divine government, I

am sure we should discover nothing in it but what tended ultimately to order. But the natural, moral, and political world exhibit every where marks of disorder, and the instruments of this disorder, are the operations of nature. Her influence is most obvious in the production of diseases, and in her hurtful or ineffectual efforts to remove them*. In again glancing at this subject I wish it to be remembered that those operations were not originally the means of injuring or seducing man, and that I believe a time will come when the exact relation between cause and effect, or, in other words, the dominion of order shall be restored over every action of his body and mind, and health and happiness again be the result of every movement of nature.

From the view I have given of the state of the blood-vessels in fever, the reader will perceive the difference between my opinions and Dr. Brown's upon this subject. The doctor supposes a fever to consist in debility. I do not admit debility to be a disease, but place it wholly in morbid excitement,

* See the Comparative View of the Diseases of the Indians, and of Civilized Nations. Vol. I.

invited and fixed by previous debility. He makes a fever to consist in a change only of a *natural* action of the blood-vessels. I maintain that it consists in a *preternatural* and convulsive action of the blood-vessels. Lastly, Dr. Brown supposes excitement and excitability to be *equally* diffused over the whole body, but in unhealthy proportions to each other. My theory places fever in excitement and excitability *unequally* diffused, manifesting themselves, at the *same time*, in morbid actions, depression, and debility from abstraction, in different parts of the body. No new excitement from without is infused into the system by the irritants which excite a fever. They only destroy its equal and natural distribution; for while the arteries are in a plus, the muscles, stomach, and bowels are in a minus state of excitement, and the business of medicine is to equalize it in the cure of fever, that is, to abstract its excess from the blood-vessels, and to restore it to the other parts of the body.

II. I come now to apply the theory which I have delivered to the explanation and description of the different phenomena or states of fever.

I have said in my sixth proposition that there is but one fever. Of course I do not admit of its artificial division into genera and species. A disease

which so frequently changes its form and place, should never have been designated, like plants and animals, by unchangeable characters. The oak tree and the lion possess exactly the same properties which they did nearly 6000 years ago. But who can say the same thing of any one disease? The pulmonary consumption is sometimes transformed into head-ach, rheumatism, diarrhœa, and mania, in the course of two or three months, or the same number of weeks. The bilious fever often appears in the same person in the form of colic, dysentery, inflammation of the liver, lungs, and brain, in the course of five or six days. The hypochondriasis and the hysteria seldom fail to exchange their symptoms twice in the four and twenty hours. Again: the oak tree has not united with any of the trees of the forest, nor has the lion imparted his specific qualities to any other animal. But who can apply similar remarks to any one disease? Phrenitis, gastritis, enteritis, nephritis, and rheumatism all appear at the same time in the gout and yellow fever. Many observations of the same kind might be made, to show the disposition of nearly all other diseases to anastomose with each other. To describe them therefore by any fixed or specific characters is as impracticable as to measure the dimensions of a cloud on a windy day, or to fix the component parts of water by weighing it in a hydro-

static balance. Much mischief has been done by nosological arrangements of diseases. They erect imaginary boundaries between things which are of a homogeneous nature. They degrade the human understanding, by substituting simple perceptions to its more dignified operations in judgment and reasoning. They gratify indolence in a physician, by fixing his attention upon the name of a disease, and thereby leading him to neglect the varying state of the system. They moreover lay a foundation for disputes among physicians, by diverting their attention from the simple, predisposing, and proximate, to the numerous, remote, and exciting causes of diseases, or to their more numerous and complicated effects. The whole materia medica is infected with the baneful consequences of the nomenclature of diseases, for every article in it is pointed only against their names, and hence the origin of the numerous contradictions among authors who describe the virtues and doses of the same medicines. By the rejection of the artificial arrangement of diseases, a revolution must follow in medicine. Observation and judgment will take the place of reading and memory, and prescriptions will be conformed to existing circumstances. The road to knowledge in medicine by this means will likewise be shortened; so that a young man will be able to qualify himself to practise physic at as

much less expence of time and labour than formerly, as a child would learn to read and write by the help of the Roman alphabet, instead of Chinese characters.

In thus rejecting the nosologies of the schools, I do not wish to see them banished from the libraries of physicians. When consulted as histories of the effects of diseases only, they may still be useful. I use the term diseases, in conformity to custom, for, properly speaking, disease is much a unit as fever. It consists simply of morbid action or excitement in some part of the body. Its different seats and degrees should no more be multiplied into different diseases, than the numerous and different effects of heat and light upon our globe should be multiplied into a plurality of suns.

The advocates for Dr. Cullen's system of medicine will not, I hope, be offended by these observations. His immense stock of reputation will enable him to sustain the loss of his nosology without being impoverished by it. In my attempts to introduce a new arrangement of fevers, I shall only give a new direction to his efforts to improve the healing art.

Were it compatible with the subject of the present inquiry, it would be easy to show, that the same difficulties and evils are to be expected from Dr. Darwin's division of diseases, as they affect the organs of sensation and motion, and as they are said to be exclusively related by association and volition, that have been deprecated from their divisions and subdivisions by the nosologists. Diseases, like vices, with a few exceptions, are necessarily undisciplined and irregular. Even the genius of Dr. Darwin has not been able to compel them to move within lines.

I return from this digression to remark that morbid action in the blood-vessels, whether it consist in preternatural force and frequency, or preternatural force without frequency, or frequency without force, constitutes fever. Excess in the force and frequency in the pulsations of the arteries have been considered as the characteristic marks of what is called inflammatory fever. There are, however, symptoms which indicate a much greater excess of irritating impressions upon the blood-vessels. These are preternatural slowness, intermissions, and depression in the pulse, such as occur in certain malignant fevers.

But there is a grade of fever, which transcends in force that which produces inflammation. It occurs frequently in hydrophobia, dysentery, colic, and, baron Humboldt lately informed me, upon the authority of Dr. Comoto, of Vera Cruz, in the yellow fever of that city, when it proves fatal in a few hours after it attacks. In vain have physicians sought to discover, by dissections, the cause of fever in those cases, when followed by death, in the parts of the body in which it was supposed, from pain and other symptoms, to be principally seated. Those parts have frequently exhibited no marks of inflammation, nor of the least deviation from a healthy state. I have ascribed this apparent absence of disease to the serous vessels being too highly excited, and thereby too much contracted, to admit the entrance of red blood into them. I wish these remarks to be remembered by the student of medicine. They have delivered me from the influence of several errors in pathology; and they are capable, if properly extended and applied, of leading to many important deductions in the practice of physic.

I shall now briefly mention the usual effects of fever, or morbid excitement in the blood-vessels, when not removed by medicine. They are,

1. Inflammation. It is produced by an effusion of red particles of blood into serous vessels, constituting what Dr. Boerhaave calls error loci. It is the second grade of fever, and, in fevers of great violence, does not take place until morbid excitement has continued for some time, or has been reduced by bleeding.

2. Secretion, or an effusion from rupture, of the serum of the blood, constituting dropsies.

3. Secretion of lymph or fibrin, forming a membrane which adheres to certain surfaces in the body.

4. Secretion of pus, also of sloughs.

5. An effusion by rupture, or a congestion of all the component parts of the blood.

6. Gangrene from the death of the blood-vessels.

7. Rupture of blood-vessels, producing hæmorrhage.

8. Redness, phlegmon, pustules, and petechiæ on the skin, and tubercles in the lungs, and on the liver and bowels.

9. Schirrus.

10. Calcareous and other earthy matters. Both these take place only in the feeble and often imperceptible grades of morbid action in the blood-vessels.

11. Death. This arises from the following causes.

1. Sudden destruction of the excitability of the blood-vessels.

2. A disorganization of parts immediately necessary to life.

3. A change in the fluids, so as to render them destructive to what are called the vital organs.

4. Debility, from the exhausted or suspended state of the excitability of the blood-vessels.

All these effects of fever are different according to its grade. Dr. Blane says fevers are rarely inflammatory in the West-Indies; that is, they pass rapidly from simple morbid excitement to congestion, hæmorrhage, gangrene, and death. This remark is confirmed by Dr. Dalzelle, who says the

pneumony in the negroes, in the French West-India islands, rarely appears in any other form than that of the notha, from the arteries in the lungs being too much stimulated to produce common inflammation; but such is the force of morbid excitement in hot climates, that it sometimes passes suddenly over all its intermediate effects, and discovers itself only in death. This appears to have taken place in the cases at Vera Cruz, mentioned by baron Humboldt.

All the different states of fever may be divided,

I. Into such as affect the whole arterial system; but with no, or very little local disease.

II. Into such as affect the whole arterial system, and are accompanied at the same time with evident local disease.

III. Into such as appear to pass by the arterial system, and to fix themselves upon other parts of the body. I shall call these states of fever *misplaced.*

I. To the first class of the states of fever belong,

1. The malignant. It constitutes the highest grade of morbid diathesis. It is known by attacking frequently without a chilly fit, by coma, a depressed, slow, or intermitting pulse, and sometimes by the absence of pain, and with a natural temperature or coldness of the skin. It occurs in the plague, in the yellow fever, in the gout, in the small-pox and measles, in the hydrophobia, and after taking opium and other stimulating substances. Dr. Quier has described a pleurisy in Jamaica, in which some of those malignant symptoms took place. They are the effect of such a degree of impression as to prostrate the arterial system, and to produce a defect of action from an excess of force. Such is this excess of force, in some instances, in this state of fever, that it induces general convulsions, tetanus, and palsy, and sometimes extinguishes life in a few hours, by means of apoplexy or syncope. From its being accompanied with these symptoms, it has received the name of *adynamique* by Dr. Alibert. The less violent degrees of stimulus in this state of fever produce palsy in the blood-vessels. It probably begins in the veins, and extends gradually to the arteries. It seems further to begin in the extremities of the arteries, and to extend by degrees to their origin in the heart. This is evident in the total absence of pulse which sometimes takes place in malignant fevers, four and twenty, and even eight

and forty hours before death. But there are cases in which this palsy affects both the veins and arteries at the same time. It is probably from this simultaneous affection of the blood-vessels, that the arteries are found to be nearly full of blood after death from malignant fevers. The depressed, and intermitting pulse which occurs in the beginning of these fevers perhaps depends upon a tendency to palsy in the arteries, independently of an affection of the heart or brain.

This *prostrate* state of fever more frequently when left to itself terminates in petechiæ, buboes, carbuncles, abscesses, and mortifications, according as serum, lymph, or red blood is effused in the viscera or external parts of the body. These morbid appearances have been ascribed to putrefaction, and the fever has received, from its supposed presence, the name of putrid. The existence of putrefaction in the blood in a fever is rendered improbable,

1. By Dr. Seybert's experiments*, which prove that it does not take place in the blood in a living state. It occurs in the excretions of bile, fæces, and urine, but in this case it does not act as a ferment, but a stimulus only upon the living body.

* Inaugural dissertation, entitled, "An Attempt to disprove the Putrefaction of the Blood in Living Animals."

2. By similar appearances, with those which have been ascribed to putrefaction, having been produced by lightning, by violent emotions of the mind, by extreme pain, and by every thing else which induces sudden and universal disorganization in the fluids and solids of the body. The following facts clearly prove that the symptoms which have been supposed to designate a putrid fever, are wholly the effect of mechanical action in the blood-vessels, and are unconnected with the introduction of a putrid ferment in the blood.

Hippocrates relates the case of a certain Antiphillus, in whom a putrid bilious fever (as he calls it) was brought on by the application of a caustic to a wound*.

An acute pain in the eye, Dr. Physick informed me, produced the symptoms of what is called a putrid fever, which terminated in death in five days, in St. George's hospital, in the year 1789.

Dr. Baynard relates, upon the authority of a colonel Bampfield, that a stag, which he had chased for some time, stopped at a brook of water in order to drink. Soon afterwards it fell and expired. The

* Epidemics, book iv.

colonel cut its throat, and was surprised to perceive the blood which issued from it had a putrid and offensive smell*.

Dr. Desportes takes notice that a fish, which he calls a sucker, affected the system nearly in the same manner as the miasmata of the yellow fever. A distressing vomiting, a coldness of the extremities, and an absence of pulse, were some of the symptoms produced by it, and an inflammation and mortification of the stomach and bowels, were discovered after death to be the effects of its violent operation.

Even opium, in large doses, sometimes produces by its powerful stimulus the same symptoms which are produced by the stimulus of marsh miasmata. These symptoms are a slow pulse, coma, a vomiting, cold sweats, a sallow colour of the face, and a suppression of the discharges by the urinary passages and bowels.

Error is often perpetuated by words. A belief in the putrefaction of the blood has done great mischief in medicine. The evil is kept up, under the influence of new theories, by the epithet putrid,

* Treatise on the Cold Bath.

which is still applied to fever in all our medical books. For which reason I shall reject it altogether hereafter, and substitute in its room

2. The *gangrenous* state of fever; for what appear to some physicians to be signs of putrefaction, are nothing but the issue of a violent inflammation left in the hands of nature, or accelerated by stimulating medicines. Thus the sun, when viewed at mid-day, appears to the naked eye, from the excess of its splendour, to be a mass of darkness, instead of an orb of light.

The same explanation of what are called putrid symptoms in fever, is very happily delivered by Mr. Hunter in the following words: "It is to be observed (says this acute physiologist) that when the attack upon these organs, which are principally connected with life, proves fatal, that the effects of the inflammation upon the constitution run through all the stages with more rapidity than when it happens in other parts; so that at its very beginning, it has the same effect upon the constitution which is only produced by the second stage of inflammation in other parts*."

* Treatise on Inflammation. chap. I. 8.

3. The *synocha*, or the common inflammatory state of fever, attacks suddenly with chills, and is succeeded by a quick, frequent, and tense pulse, great heat, thirst, and pains in the bones, joints, breast, or sides. These symptoms sometimes occur in the plague, the jail and yellow fever, and the small-pox; but they are the more common characteristics of pleurisy, gout, and rheumatism. They now and then occur in the influenza, the measles, and the puerperile fever.

4. The *synochus* state of fever is known by a full, quick, and round pulse without tension. The autumnal bilious fever and colic, also the gout, often appear in this form.

5. There is a state of fever in which the pulse is small, but tense and quick. The patient, in this state of fever, is seldom confined to his bed. We observe it sometimes in the chronic rheumatism, and in pulmonary consumption. The inflammatory state of this grade of fever is proved from the inefficacy of the volatile tincture of guaiacum and other stimulants to remove it, and from its yielding so suddenly to blood-letting. I have called it the *synochula* state of fever.

6. There is a state of fever inclining more to the synocha, than what is called the typhus, or low chronic state of fever. I have called it the *synochoid* state of fever.

7. The *typhus* state of fever is generally preceded by all those circumstances which debilitate the system, both by the action and abstraction of stimuli. It is known by a weak and frequent pulse, a disposition to sleep, a torpor of the alimentary canal, tremors of the hands, a dry tongue, and, in some instances, by a diarrhœa. These symptoms occur most frequently in what is called the jail, the ship, and the hospital fever. I heard of it in a few cases in the yellow fever of 1793, and all writers take notice of cases of the plague, which run on into a slow fever that continues 30 or 40 days. I have seen it succeed the common bilious fever, pleurisy, and influenza. It has been confounded with the malignant state of fever, or what is called the typhus gravior; but it differs widely from it in being accompanied by a feeble excitement in the blood-vessels, from a feeble stimulus, and by the usual signs of debility from abstraction in every other part of the body.

From the accession of new stimuli, or an increase in the force of former ones, this typhus state of

fever sometimes assumes, on the 11th, 14th, and even 20th days, the symptoms of the synocha state of fever. It will be useful to remember this remark, not only because it establishes the unity of fever, but because it will justify the use of a remedy, seldom prescribed after the disease has acquired that name which associates it with stimulating medicines.

The common name of this state of fever, is the *nervous* fever. This name is improper; for it invades the nervous system by pain, delirium, and convulsions much less than several other states of fever. To prevent the absurd and often fatal association of ideas upon the treatment of this state of fever, I have called it, from its duration, the *low chronic* state of fever. I have adopted the term *low*, from Dr. Butter's account of the remitting fever of children, in order to distinguish it from states of fever to be mentioned hereafter, in which the patient is not confined to his bed. This new name of the typhus or nervous fever establishes its analogy with several other diseases. We have the acute and the chronic rheumatism; the acute and chronic pneumony, commonly called the pleurisy and pulmonary consumption; the acute and chronic inflammation of the brain, known unfortunately by the unrelated names of phrenitis, madness, and

internal dropsy of the brain. Why should we hesitate, in like manner, in admitting acute and chronic fever, in all those cases where no local inflammation attends?

8. The *typhoid* state of fever is composed of the synocha and low chronic states of fever. It is the *slow* nervous fever of Dr. Butter. The excitement of the blood-vessels is somewhat greater than in the *low* chronic state of fever. Perhaps the muscular fibres of the blood-vessels, in this state of fever, are affected by different degrees of stimulus and excitement. Supposing a pulse to consist of eight cords, I think I have frequently felt more or less of them tense or relaxed, according as the fever partook more or less of the synocha, or low chronic states of fever. This state of fever occurs most frequently in what are called the hectic and puerperal fevers, and in the scarlatina.

9. The *hectic* state of fever differs from all the other states of fever, by the want of regularity in its paroxysms, in which chills, fevers, and sweats are included; and by the brain, nerves, muscles, and alimentary canal being but little impaired in their functions by it. It appears to be an exclusive disease of the blood-vessels. It occurs in the pulmonary consumption, in some cases of lues, of

scrophula, and of the gout, and after most of the states of fever which have been described. The force of the pulse is various, being occasionally synochoid, typhoid, and typhus.

10. Intermissions, or the *intermitting* and remitting states of fever, are common to all the states of fever which have been mentioned. But they occur most distinctly and universally in those which partake of the bilious diathesis. They have been ascribed to the reproduction of bile, to the recurrence of debility, and to the influence of the heavenly bodies upon the system. None of these hypotheses has explained the recurrence of fever, where the bile has not been in fault, where debility is uniform, and where the paroxysms of fever do not accord with the revolutions of any part of the solar system. I have endeavoured to account for the recurrence of the paroxysm of fever, in common with all other periodical diseases, by means of a natural or adventitious association of motions. Dr. Percival has glanced at this law of animal matter; and Dr. Darwin has explained by it, in the most ingenious manner, many natural and morbid actions in the human body.

11. There is a state of fever in which the morbid action of the blood-vessels is so feeble as

scarcely to be perceptible. Like the hectic state of fever, it seldom affects the brain, nerves, muscles, or alimentary canal. It is known in the southern states of America by the name of *inward* fevers. The English physicians formerly described it by the name of febricula.

These eleven states of fever may be considered as *primary* in their nature. All the states which remain to be enumerated belong to some one of them, or they are compounds of two, three, or more of them. Even these primary states of fever seldom appear in the simple form in which they have been described. They often blend their symptoms; and sometimes all the states appear at different times in the course of a fever. This departure from a uniformity in the character of fevers must be sought for in the changes of the weather, in the casual application of fresh irritants, or in the operation of the remedies which have been employed to cure them.

To the first class of the states of fever belong the sweating, the fainting, the burning, and the cold and chilly states of fever.

12. The *sweating* state of fever occurs in the plague, in the yellow fever, in the small-pox, the

pleurisy, the rheumatism, and in the hectic and intermitting states of fever. Profuse sweats appeared every other day in the autumnal fever of 1795 in Philadelphia, without any other symptom of an intermittent. The English sweating sickness was nothing but a symptom of the plague. The sweats in all these cases are the effects of morbid and excessive action, concentrated in the capillary vessels.

13. The *fainting* state of fever accompanies the plague, the yellow fever, the small-pox, and some states of pleurisy. It is the effect of great depression; hence it occurs most frequently in the beginning of those states of fever.

14. The *burning* state of fever has given rise to what has been called a species of fever. It is the causus of authors. Dr. Mosely, who rejects the epithet of yellow, when applied to the bilious fever, because it is only one of its accidental symptoms, very improperly distinguishes the same fever by another symptom, viz. the burning heat of the skin, and which is not more universal than the yellowness which attends it.

15. The *cold* and *chilly* state of fever differs from a common chilly fit, by continuing four or five days, and to such a degree, that the patient fre-

quently cannot bear his arms out of the bed. The coldness is most obstinate in the hands and feet. A *coolness* only of the skin attends in some cases, which is frequently mistaken for an absence of fever.

Having mentioned those states of fever which affect the arterial system without any, or with but little local disease, I proceed next to enumerate those states of fever which belong to the

II. Class of the order that was mentioned, in which there are local affections combined with general fever. They are,

16. The *intestinal* state of fever. I have been anticipated in giving this epithet to fever, by Dr. Balfour*. It includes the cholera morbus, diarrhœa, dysentery, and colic. The remitting bilious fever appears, in all the above forms, in the summer months. They all belong to the febris introversa of Dr. Sydenham. The jail fever appears likewise frequently in the form of diarrhœa and dysentery. The dysentery is the offspring of marsh and human miasmata, but it is often induced in a weak state of the bowels, by other exciting causes.

* Account of the Intestinal Remitting Fever of Bengal.

The colic occasionally occurs with states of fever to be mentioned hereafter.

17. The *pulmonary* state of fever includes the true and bastard pneumony in their acute forms; also catarrh from cold and influenza, and the chronic form of pneumony in what is called pulmonary consumption.

18. The *eruptive* state of fever includes the small-pox, measles, erysipelas, miliary fever, chicken-pox, and pemphigus.

19. The *anginose* state of fever includes all those affections of the throat which are known by the names of cynanche inflammatoria, tonsillaris, parotidea, maligna, scarlatina, and trachealis. The cynanche trachealis is a febrile disease. The membrane which produces suffocation and death in the wind-pipe is the effect of inflammation. It is said to be formed, like other membranes which succeed inflammation, from the coagulable lymph of the blood.

20. The *rheumatic* state of fever is confined chiefly to the labouring part of mankind. The topical affection is seated most commonly in the joints and muscles, which, from being exercised

more than other parts of the body, become more debilitated, and are, in consequence thereof, excited into morbid and inflammatory action.

21. The *arthritic* or *gouty* state of fever differs from the rheumatic, in affecting, with the joints and muscles, all the nervous and lymphatic systems, the viscera, and the skin. Its predisposing, exciting, and proximate causes are the same as the rheumatic and other states of fever. It bears the same ratio to rheumatism, which the yellow fever bears to the common bilious fever. It is a fever of more force than rheumatism.

22. The *cephalic*, in which are included the phrenitic, lethargic, apoplectic, paralytic, hydrocephalic, and maniacal states of fever. That madness is originally a state of fever, I infer, 1. From its causes, many of which are the same as those which induce all the other states of fever. 2. From its symptoms, particularly a full, tense, quick, and sometimes a slow pulse. 3. From the inflammatory appearances of the blood which has been drawn to relieve it. And, 4. From the phenomena exhibited by dissection in the brains of maniacs, being the same as are exhibited by other inflamed viscera after death. These are, effusions of water or blood, abscesses, and schirrus. The hardness in the

brains of maniacs, taken notice of by several authors, is nothing but a schirrus (sui generis), induced by the neglect of sufficient evacuations in this state of fever. The reader will perceive by these observations, that I reject madness from its supposed primary seat in the mind or nerves. It is as much an original disease of the blood-vessels, as any other state of fever. It is to phrenitis, what pulmonary consumption is to pneumony. The derangement in the operations of the mind is the effect only of a chronic inflammation of the brain, existing without an abstraction of musoular excitement.

23. The *nephritic* state of fever is often induced by calculi, but it frequently occurs in the gout, small-pox, and malignant states of fever. There is such an engorgement, or choaking of the vessels of the kidneys, that the secretion of the urine is sometimes totally obstructed, so that the bladder yields no water to the catheter. It is generally accompanied with a full or tense pulse, great pain, sickness, or vomiting, high coloured urine, and a pain along the thigh and leg, with occasionally a retraction of one of the testicles. It exists sometimes without any pain. Of this I met with several instances in the yellow fever of 1793. I include diabetes in this state of fever.

24. The *hydropic* state of fever, in which are included collections of water, in the lungs, cavity of the thorax, cavity of the abdomen, ovaria, scrotum, testicles, and lower extremities, and usually preceded, and generally accompanied with morbid action in the blood-vessels. That dropsy is a state of fever, I have endeavoured to prove in another place*. Nineteen dropsies out of twenty appear to be original arterial diseases, and the water, which has been supposed to be their cause, is as much the effect of preternatural and morbid action in the blood-vessels, as pus, gangrene, and schirrus are of previous inflammation. This has been demonstrated, by the late Dr. Cooper, in a man who died of an ascites in the Pennsylvania hospital. Pus and blood, as well as water, were found in the cavity of the abdomen. It is no objection to this theory of dropsy, that we sometimes find water in the cavities of the body after death, without any marks of inflammation in the contiguous blood-vessels. We often find pus, both in the living and dead body, under the same circumstances, where we are sure it was not preceded by any of the obvious marks of inflammation.

* On Dropsies, vol. II.

25. The *hæmorrhagic* state of fever, in which are included discharges of blood from the nose, lungs, stomach, liver, bowels, kidneys and bladder, hæmorrhoidal vessels, uterus, and skin. Hæmorrhages have been divided into active and passive. It would be more proper to divide them, like other states of general fever, into hæmorrhages of strong and feeble morbid action. There is seldom an issue of blood from a vessel in which there does not exist preternatural or accumulated excitement. We observe this hæmorrhagic state of fever most frequently in malignant fevers, in pulmonary consumption, in pregnancy, and in that period of life in which the menses cease to be regular.

26. The *amenorrhagic* state of fever occurs more frequently than is suspected by physicians. A full and quick pulse, head-ach, thirst, and preternatural heat often accompany a chronic obstruction of the menses. The inefficacy, and even hurtful effects, of what are called emenagogue medicines, in this state of the system, without previous depletion, show the propriety of introducing it among the different states of fever.

I have designedly omitted to take notice of other states of general fever accompanied with local

disease, because they are most frequently combined with some one or more of those which have been mentioned. They may all be seen in Dr. Cullen's Synopsis, with their supposed respective generic characters, under the class of pyrexiæ, and the order of fevers. We come now in the

III. And last place, to mention the *misplaced* states of fever. The term is not a new one in medicine. The gout is said to be misplaced, when it passes from the feet to the viscera. The periodical pains in the head, eyes, ears, jaws, hips, and back, which occur in the sickly autumnal months, and which impart no fulness, force, nor frequency to the pulse, are all misplaced fevers. There are, besides these, many other local morbid affections, which are less suspected of belonging to febrile diseases. The nature of these states of fever may easily be understood, by recollecting one of the laws of sensation, that is, that certain impressions, which excite neither sensation nor motion in the part of the body to which they are applied, excite both in another part. Thus worms, which are not felt in the stomach or bowels, often produce a troublesome sensation in the throat, and a stone, which is attended with no pain in the bladder, produces a troublesome itching in the glans penis. In like manner, the irritants which produce fever in ordi-

nary cases pass through the blood-vessels, and convey their usual morbid effects into a remote part of the body which has been prepared to receive them by previous debility. That this is the case, I infer further, from fevers being called back from their misplaced or suffocated situations, by creating an artificial debility in the arteries by the abstraction of blood. This is often done in muscular convulsions, and in several diseases of the brain.

Under this class of fevers are included

27. The *chronic hepatic* state of fever. The causes, symptoms, and remedies of the liver disease of the East-Indies, as mentioned by Dr. Girdlestone, all prove that it is nothing but a bilious fever translated from the blood-vessels, and absorbed, or suffocated, as it were, in the liver. This view of the chronic hepatitis is important, inasmuch as it leads to the liberal use of all the remedies which cure bilious fever. Gall stones and contusions now and then produce a hepatitis, but under no other circumstances do I believe it ever exists, but as a symptom of general or latent fever.

28. The hæmorrhoids are frequently a local disease, but they are sometimes accompanied with pain, giddiness, chills, and an active pulse. When

these symptoms occur, it should be considered as a *hæmorrhoidal* state of fever.

29. The opthalmia, when it occurs, as it frequently does in sickly seasons, with a quick and tense pulse, and pains diffused over the whole head, may properly be called an *opthalmic* state of fever.

30. The tooth-ach, and

31. Ear-ach, when they arise from colds, and are attended with great heat, a quick and tense pulse, and pains in the head, are *odontalgic* and *otalgic* states of fever.

32. The apthæ, from the pain and fever which attend them, are justly entitled to the name of the *apthous* state of fever.

33. The symptoms of scrophula, as described by Dr. Hardy, in his treatise on the glandular disease of Barbadoes, clearly prove it to be a *misplaced* state of fever.

34. The scurvy has lately been proved by Dr. Claiborne, in his inaugural dissertation, published in the year 1797, to arise from so many of the

causes, and to possess so many of the symptoms, of the low chronic and petechial states of fever, that I see no impropriety in considering it as a state of fever.

35. The *convulsive* or *spasmodic* state of fever. Convulsions, it is well known, often usher in fevers, more especially in children. But the connection between spasmodic affections and fever, in adults, has been less attended to by physicians. The same causes which produced general fever and hepatitis in the East-Indies, in some soldiers, produced locked jaw in others. Several of the symptoms of this disease, as described by Dr. Girdlestone, such as coldness on the surface of the body, cold sweats on the hands and feet, intense thirst, a white tongue, incessant vomitings, and carbuncles, all belong to the malignant state of fever*. By means of blood-letting, and the other remedies for the violent state of bilious fever, I have seen the convulsions in this disease translated from the muscles to the blood-vessels, where they immediately produced *all* the common symptoms of fever.

36. The *hysterical* and *hypochondriacal* states of fever. The former is known by a rising in the

* Essay on the Spasmodic Affections in India, p. 53, 54, 55.

throat, which is for the most part erroneously ascribed to worms, by pale urine, and by a disposition to shed tears, or to laugh upon trifling occasions. The latter discovers itself by false opinions of the nature and danger of the disease under which the patient labours. Both these states of the nervous system occur frequently in the gout and in the malignant state of fever. It is common to say, in such cases, that patients have a complication of diseases; but this is not true, for the hysterical and hypochondriacal symptoms are nothing but the effects of one remote cause, concentrating its force chiefly upon the nerves and muscles.

37. The *cutaneous* state of fever. Dr. Sydenham calls a dysentery a "febris introversa." Eruptions of the skin are often nothing but the reverse of this introverted fever. They are a fever translated to the skin; hence we find them most common in those countries and seasons in which fevers are epidemic. The prickly heat, the rash, and the essere of authors, are all states of misplaced fever. "Agues, fevers, and even *pleurisies* (says Mr. Townsend, in his Journey through Spain*), are said often to terminate in scabies, and this frequently gives place to them, returning, however, when

* Vol. II. Dublin edition, p. 262.

the fever ceases. In adults it takes possession of the hands and arms, with the legs and thighs, covering them with a filthy crust." Small boils are common among the children in Philadelphia, at the time the cholera infantum makes its appearance. These children always escape the summer epidemic. The elephantiasis described by Dr. Hillary, in his account of the diseases of Barbadoes, is evidently a translation of an intermittent to one of the limbs. It is remarkable, that the leprosy and malignant fevers of all kinds have appeared and declined together in the same ages and countries. But further, petechiæ sometimes appear on the skin without fever. Cases of this kind, with and without hæmorrhages, are taken notice of by Riverius*, Dr. Duncan, and many other practical writers. They are cotemporary or subsequent to fevers of a malignant complexion. They occur likewise in the scurvy. From some of the predisposing, remote, and exciting causes of this disease, and from its symptoms and remedies, I have suspected it, like the petechiæ mentioned by Riverius, to be originally a fever generated by human miasmata, in a misplaced state. The hæmorrhages which sometimes accompany the scurvy, certainly arise from a morbid state of the blood-vessels. The heat and

* Praxis Medica, lib. xviii. cap. i.

quick pulse of fever are probably absent, only because the preternatural excitement of the whole sanguiferous system is confined to those extreme or cutaneous vessels which pour forth blood. In like manner the fever of the small-pox deserts the blood-vessels, as soon as a new action begins on the skin. Or perhaps the excitability of the larger blood-vessels may be so far exhausted by the long or forcible impression of the remote and predisposing causes of the scurvy, as to be incapable of undergoing the convulsive action of general fever.

With this I close my inquiry into the cause of fever. It is imperfect from its brevity, as well as from other causes. I commit it to my pupils to be corrected and improved.

"We think our fathers fools, so wise we grow.
"Our wiser sons, *I hope*, will think us so."

AN ACCOUNT

OF THE

Bilious Remitting Yellow Fever,

AS IT

APPEARED IN PHILADELPHIA,

IN THE YEAR 1793.

AN ACCOUNT, &c.

BEFORE I proceed to deliver the history of this fever, it will be proper to give a short account of the diseases which preceded it.

The state of the weather during the first seven months of the year, and during the time in which the fever prevailed in the city, as recorded by Mr. Rittenhouse, will be inserted immediately after the history of the disease.

The *mumps*, which made their appearance in December, 1792, continued to prevail during the month of January, 1793. Besides this disease there were many cases of catarrh in the city, brought on chiefly by the inhabitants exposing themselves for several hours on the damp ground,

in viewing the aërial voyage of Mr. Blanchard, on the 9th day of the month.

The weather, which had been moderate in December and January, became cold in February. The mumps continued to prevail during this month with symptoms so inflammatory as to require, in some cases, two bleedings. Many people complained this month of pains and swellings in the jaws. A few had the scarlatina anginosa.

The mumps, pains in the jaws, and scarlatina continued throughout the month of March. I was called to two cases of pleurisy in this month, which terminated in a temporary mania. One of them was in a woman of ninety years of age, who recovered. The blood drawn in the other case (a gentleman from Maryland) was dissolved. The continuance of a tense pulse induced me, notwithstanding, to repeat the bleeding. The blood was now sizy. A third bleeding was prescribed, and my patient recovered. Several cases of obstinate erysipelas succeeded inoculation in children during this and the next month, one of which proved fatal.

Blossoms were universal on the fruit-trees, in the gardens of Philadelphia, on the first day of April. The scarlatina anginosa continued to be the reigning epidemic in this month.

There were several warm days in May, but the city was in general healthy. The birds appeared two weeks sooner this spring than usual.

The register of the weather shows, that there were many warm days in June. The scarlatina continued to maintain its empire during this month.

The weather was uniformly warm in July. The scarlatina continued during the beginning of this month, with symptoms of great violence. A son of James Sharswood, aged seven years, had, with the common symptoms of this disease, great pains and swellings in his limbs, accompanied with a tense pulse. I attempted in vain to relieve him by vomits and purges. On the 10th day of the month, I ordered six ounces of blood to be drawn from his arm, which I observed afterwards to be very sizy. The next day he was nearly well. Between the 22d and the 24th days of the month, there died three persons, whose respective ages were 80, 92, and 96½. The weather at this time was extremely warm. I have elsewhere taken notice of the fatal influence of extreme heat, as well as cold, upon human life in old people. A few bilious remitting fevers appeared towards the close of this month. One of them under my care ended in a typhus or chronic fever, from which the patient

was recovered with great difficulty. It was the son of Dr. Hutchins, of the island of Barbadoes.

The weather, for the first two or three weeks in August, was temperate and pleasant. The cholera morbus and remitting fevers were now common. The latter, were attended with some inflammatory action in the pulse, and a determination to the breast. Several dysenteries appeared at this time, both in the city and in its neighbourhood. During the latter part of July, and the beginning of this month, a number of the distressed inhabitants of St. Domingo, who had escaped the desolation of fire and sword, arrived in the city. Soon after their arrival, the influenza made its appearance, and spread rapidly among our citizens. The scarlatina still kept up a feeble existence among children. The above diseases were universal, but they were not attended with much mortality. They prevailed in different parts of the city, and each seemed to appear occasionally to be the ruling epidemic. The weather continued to be warm and dry. There was a heavy rain on the 25th of the month, which was remembered by the citizens of Philadelphia, as the last that fell for many weeks afterwards.

There was something in the heat and drought of the summer months which was uncommon, in their influence upon the human body. Labourers every where gave out (to use the country phrase) in harvest, and frequently too when the mercury in Fahrenheit's thermometer was under 84°. It was ascribed by the country people to the calmness of the weather, which left the sweat produced by heat and labour to dry slowly upon the body.

The crops of grain and grass were impaired by the drought. The summer fruits were as plentiful as usual, particularly the melons, which were of an excellent quality. The influence of the weather upon the autumnal fruits, and upon vegetation in general, shall be mentioned hereafter.

I now enter upon a detail of some solitary cases of the epidemic, which soon afterwards spread distress through our city, and terror throughout the United States.

On the 5th of August, I was requested by Dr. Hodge to visit his child. I found it ill with a fever of the bilious kind, which terminated (with a yellow skin) in death on the 7th of the same month.

On the 6th of August, I was called to Mrs. Bradford, the wife of Mr. Thomas Bradford. She had all the symptoms of a bilious remittent, but they were so acute as to require two bleedings, and several successive doses of physic. The last purge she took was a dose of calomel, which operated plentifully. For several days after her recovery, her eyes and face were of a yellow colour.

On the same day, I was called to the son of Mrs. M'Nair, who had been seized violently with all the usual symptoms of a bilious fever. I purged him plentifully with salts and creamor tartar, and took ten or twelve ounces of blood from his arm. His symptoms appeared to yield to these remedies; but on the 10th of the month a hæmorrhage from the nose came on, and on the morning of the 12th he died.

On the 7th of this month I was called to visit Richard Palmer, a son of Mrs. Palmer, in Chesnut-street. He had been indisposed for several days with a sick stomach, and vomiting after eating. He now complained of a fever and head-ach. I gave him the usual remedies for the bilious fever, and he recovered in a few days. On the 15th day of the same month I was sent for to visit his brother William, who was seized with all the symp-

toms of the same disease. On the 5th day his head-ach became extremely acute, and his pulse fell to sixty strokes in a minute. I suspected congestion to have taken place in his brain, and ordered him to lose eight ounces of blood. His pulse became more frequent, and less tense after bleeding, and he recovered in a day or two afterwards.

On the 14th day of this month I was sent for to visit Mrs. Leaming, the wife of Mr. Thomas Leaming. I suspected at first that she had the influenza, but in a day or two her fever put on bilious symptoms. She was affected with an uncommon disposition to faint. Her pulse was languid, but *tense*. I took a few ounces of blood from her, and purged her with salts and calomel. I afterwards gave her a small dose of laudanum which disagreed with her. In my note book I find I have recorded that "she was worse for it." I was led to make this remark by its being so very uncommon for a person, who had been properly bled and purged, to take laudanum in a common bilious fever without being benefited by it. She recovered, however, slowly, and was yellow for many days afterwards.

On the morning of the 18th of this month I was requested to visit Peter Aston, in Vine-street, in consultation with Dr. Say. I found him on the third day of a most acute bilious fever. His eyes were inflamed, and his face flushed with a deep red colour. His pulse seemed to forbid evacuations. We prescribed the strongest cordials, but to no purpose. We found him, at 6 o'clock in the evening, sitting upon the side of his bed, perfectly sensible, but without a pulse, with cold clammy hands, and his face of a yellowish colour. He died a few hours after we left him.

None of the cases which I have mentioned excited the least apprehension of the existence of a malignant or yellow fever in our city; for I had frequently seen sporadic cases in which the common bilious fever of Philadelphia had put on symptoms of great malignity, and terminated fatally in a few days, and now and then with a yellow colour on the skin, before or immediately after death.

On the 19th of this month I was requested to visit the wife of Mr. Peter Le Maigre, in Water-street, between Arch and Race-streets, in consultation with Dr. Foulke and Dr. Hodge. I found her in the last stage of a highly bilious fever. She

vomited constantly, and complained of great heat and burning in her stomach. The most powerful cordials and tonics were prescribed, but to no purpose. She died on the evening of the next day.

Upon coming out of Mrs. Le Maigre's room I remarked to Dr. Foulke and Dr. Hodge, that I had seen an unusual number of bilious fevers, accompanied with symptoms of uncommon malignity, and that I suspected all was not right in our city. Dr. Hodge immediately replied, that a fever of a most malignant kind had carried off four or five persons within sight of Mr. Le Maigre's door, and that one of them had died in twelve hours after the attack of the disease. This information satisfied me that my apprehensions were well founded. The origin of this fever was discovered to me at the same time, from the account which Dr. Foulke gave me of a quantity of damaged coffee which had been thrown upon Mr. Ball's wharf, and in the adjoining dock, on the 24th of July, nearly in a line with Mr. Le Maigre's house, and which had putrefied there to the great annoyance of the whole neighbourhood.

After this consultation I was soon able to trace all the cases of fever which I have mentioned to this source. Dr. Hodge lived a few doors above

Mr. Le Maigre's, where his child had been exposed to the exhalation from the coffee for several days. Mrs. Bradford had spent an afternoon in a house directly opposite to the wharf and dock on which the putrid coffee had emitted its noxious effluvia, a few days before her sickness, and had been much incommoded by it. Her sister, Mrs. Leaming, had visited her during her illness at her house, which was about two hundred yards from the infected wharf. Young Mr. M'Nair and Mrs. Palmer's two sons had spent whole days in a compting house near where the coffee was exposed, and each of them had complained of having been made sick by its offensive smell, and Mr. Aston had frequently been in Water-street near the source of the exhalation.

This discovery of the malignity, extent, and origin of a fever which I knew to be attended with great danger and mortality, gave me great pain. I did not hesitate to name it the *bilious remitting yellow fever*. I had once seen it epidemic in Philadelphia, in the year 1762. Its symptoms were among the first impressions which diseases made upon my mind. I had recorded some of these symptoms, as well as its mortality. I shall here introduce a short account of it, from a note book which I kept during my apprenticeship.

" In the year 1762, in the months of August, " September, October, November, and December, " the bilious yellow fever prevailed in Philadelphia, " after a *very hot summer*, and spread like a plague, " carrying off daily, for some time, upwards of " twenty persons.

" The patients were generally seized with ri- " gours, which were succeeded with a violent fe- " ver, and pains in the head and back. The pulse " was full, and sometimes irregular. The eyes " were inflamed, and had a yellowish cast, and a " vomiting almost always attended.

" The 3d, 5th, and 7th days were mostly criti- " cal, and the disease generally terminated on one " of them, in life or death.

" An eruption on the 3d or 7th day over the body " proved salutary.

" An excessive heat and burning about the " region of the liver, with cold extremities, por- " tended death to be at hand."

I have taken notice, in my note book, of the principal remedy which was prescribed in this fe-

ver by my preceptor in medicine, but this shall be mentioned hereafter

Upon my leaving Mrs Le Maigre's, I expressed my distress at what I had discovered, to several of my fellow-citizens. The report of a malignant and mortal fever being in town spread in every direction, but it did not gain universal credit. Some of those physicians who had not seen patients in it denied that any such fever existed, and asserted (though its mortality was not denied) that it was nothing but the common annual remittent of the city. Many of the citizens joined the physicians in endeavouring to discredit the account I had given of this fever, and for a while it was treated with ridicule or contempt. Indignation in some instances was excited against me, and one of my friends, whom I advised in this early stage of the disease to leave the city, has since told me that for that advice "he had hated me."

My lot in having thus disturbed the repose of the public mind, upon the subject of general health, was not a singular one. There are many instances upon record, of physicians who have rendered themselves unpopular, and even odious to their fellow-citizens, by giving the first notice of the existence of malignant and mortal diseases. A

physician, who asserted that the plague was in Messina, in the year 1743, excited so much rage in the minds of his fellow-citizens against him, as to render it necessary for him to save his life by retreating to one of the churches of that city.

In spite, however, of all opposition, the report of the existence of a malignant fever in the city gained so much ground, that the governor of the state directed Dr. Hutchinson, the inspector of sickly vessels, to inquire into the truth of it, and into the nature of the disease.

In consequence of this order, the doctor wrote letters to several of the physicians in the city, requesting information relative to the fever. To his letter to me, dated the 24th of August, I replied on the same day, and mentioned not only the existence of a malignant fever, but the streets it occupied, and my belief of its being derived from a quantity of coffee which had putrified on a wharf near Arch-street. This, and other information collected by the doctor, was communicated to the health officer, in a letter dated the 27th of August, in which he mentioned the parts of the city where the disease prevailed, and the number of persons who had died of it, supposed by him to be about 40, but which subsequent inquiries proved to be

more than 150. He mentioned further, in addition to the damaged coffee, some putrid hides, and other putrid animal and vegetable substances, as the supposed cause of the fever, and concluded by saying, as he had not heard of any foreigners or sailors being infected, nor of its being found in any lodging-houses, that " it was not an imported disease."

In the mean while the disease continued to spread, and with a degree of mortality that had never been known from common fevers.

On the 25th of the month, the college of physicians was summoned by their president to meet, in order to consult about the best methods of checking the progress of the fever in the city. After some consideration upon the nature of the disease, a committee was appointed to draw up some directions for those purposes; and the next day the following were presented to the college, and adopted unanimously by them. They were afterwards published in most of the newspapers.

Philadelphia, August 26th, 1793.

The college of physicians having taking into consideration the malignant and contagious fever that

now prevails in this city, have agreed to recommend to their fellow-citizens the following means of preventing its progress.

1st. That all unnecessary intercourse should be avoided with such persons as are infected by it.

2d. To place a mark upon the door or window of such houses as have any infected persons in it.

3d. To place the persons infected in the centre of large and airy rooms, in beds without curtains, and to pay the strictest regard to cleanliness, by frequently changing their body and bed linen, also by removing, as speedily as possible, all offensive matters from their rooms.

4th. To provide a large and airy hospital, in the neighbourhood of the city, for the reception of such poor persons as cannot be accommodated with the above advantages in private houses.

5th. To put a stop to the tolling of the bells.

6th. To bury such persons as die of this fever in carriages, and in as private a manner as possible.

7th. To keep the streets and wharves of the city as clean as possible. As the contagion of the disease may be taken into the body, and pass out of it without producing the fever, unless it be rendered active by some occasional cause, the following means should be attended to, to prevent the contagion being excited into action in the body.

8th. To avoid all fatigue of body and mind.

9th. To avoid *standing* or *sitting* in the sun; also in a current of air, or in the evening air.

10th. To accommodate the dress to the weather, and to exceed rather in warm, than in cool clothing.

11th. To avoid intemperance, but to use fermented liquors, such as wine, beer, and cyder, in moderation.

The college conceive *fires* to be very ineffectual, if not dangerous means of checking the progress of this fever. They have reason to place more dependence upon the burning of *gunpowder*. The benefits of *vinegar* and *camphor* are confined chiefly to infected rooms, and they cannot be used too frequently upon handkerchiefs, or in smelling-bottles,

by persons whose duty calls to visit or attend the sick.

Signed by order of the college,

WILLIAM SHIPPEN, jun.
Vice president.
SAMUEL P. GRIFFITTS,
Secretary.

From a conviction that the disease originated in the putrid exhalations from the damaged coffee, I published in the American Daily Advertiser, of August 29th, a short address to the citizens of Philadelphia, with a view of directing the public attention to the spot where the coffee lay, and thereby of checking the progress of the fever as far as it was continued by the original cause.

This address had no other effect than to produce fresh clamours against the author; for the citizens, as well as most of the physicians of Philadelphia, had adopted a traditional opinion that the yellow fever could exist among us only by importation from the West-Indies.

In consequence, however, of a letter from Dr. Foulke to the mayor of the city, in which he had

decided, in a positive manner, in favour of the generation of the fever from the putrid coffee, the mayor gave orders for the removal of the coffee, and the cleaning of the wharf and dock. It was said that measures were taken for this purpose; but Dr. Foulke, who visited the place where the coffee lay, repeatedly assured me, that they were so far from being effectual, that an offensive smell was exhaled from it many days afterwards.

I shall pass over, for the present, the facts and arguments on which I ground my assertion of the generation of this fever in our city. They will come in more properly in the close of the history of the disease.

The seeds of the fever, when received into the body, were generally excited into action in a few days. I met with several cases in which they acted so as to produce a fever on the same day in which they were received into the system, and I heard of two cases in which they excited sickness, fainting, and fever within one hour after the persons were exposed to them. I met with no instance in which there was a longer interval than sixteen days between their being received into the body and the production of the disease.

This poison acted differently in different constitutions, according to previous habits, to the degrees of predisposing debility, or to the quantity and concentration of the miasmata which had been received into the body.

In some constitutions, the miasmata were at once a remote, a predisposing, and an exciting cause of the disease; hence some persons were affected by them, who had not departed in any instance from their ordinary habits of living, as to diet, dress, and exercise. But it was more frequently brought on by those causes acting in succession to each other.

I shall here refer the reader to the principles laid down in the outlines of the theory of fever, for an account of the manner in which the system was predisposed to this disease, by the debility induced by the reduction of its excitement, by action and abstraction, and by subsequent depression. Where a predisposition was thus produced, the fever was excited by the following causes, acting directly or indirectly upon the system. Where this predisposition did not exist, the exciting causes produced both the predisposition and the disease. They were,

1. *Great labour*, or exercises of body or mind, in walking, riding, watching, or the like. It was labour which excited the disease so universally among the lower class of people. A long walk often induced it. Few escaped it after a day, or even a few hours spent in gunning. A hard trotting horse brought it on two of my patients. Perhaps riding on horseback, and in the sun, was the exciting cause of the disease in most of the citizens and strangers who were affected by it in their flight from the city. A fall excited it in a girl, and a stroke upon the head excited it in a young man who came under my care. Many people were seized with the disease in consequence of their exertions on the night of the 7th of September, in extinguishing the fire which consumed Mr. Dobson's printing-office, and even the less violent exercise of working the fire engines, for the purpose of laying the dust in the streets, added frequently to the number of the sick.

2. *Heat*, from every cause, but more especially the heat of the sun, was a very common exciting cause of the disease. The register of the weather during the latter end of August, the whole of September, and the first two weeks in October will show how much the heat of the sun must have contributed to excite the disease, more especially

among labouring people. The heat of common fires likewise became a frequent cause of the activity of the miasmata where they had been received into the body; hence the greater mortality of the disease among bakers, blacksmiths, and hatters than among any other class of people.

3. *Intemperance* in eating or drinking. A plentiful meal, and a few extra glasses of wine seldom failed of exciting the fever. But where the body was strongly impregnated with the seeds of the disease, even the smallest deviation from the customary stimulus of diet, in respect to quality or quantity, roused them into action. A supper of twelve oysters in one, and of but three in another, of my patients produced the disease. Half an ounce of meat excited it in a lady who had lived, by my advice, for two weeks upon milk and vegetables, and even a supper of sallad, dressed after the French fashion, excited it in one of Dr. Mease's patients.

4. *Fear.* In many people the disease was excited by a sudden paroxysm of fear; but I saw some remarkable instances where timid people escaped the disease, although they were constantly exposed to it. Perhaps a moderate degree of fear served to counteract the excessive stimulus of the miasmata, and thereby to preserve the body in a state

of healthy equilibrium. I am certain that fear did no harm after the disease was formed, in those cases where great morbid excess of action had taken place. It was an early discovery of this fact which led me not to conceal from my patients the true name of this fever, when I was called to them on the *day* of their being attacked by it. The fear co-operated with some of my remedies (to be mentioned hereafter) in reducing the morbid excitement of the arterial system.

5. *Grief.* It was remarkable that the disease was not excited in many cases in the attendants upon the sick, while there was a hope of their recovery. The grief which followed the extinction of hope, by death, frequently produced it within a day or two afterwards, and that not in one person only, but often in most of the near relations of the deceased. But the disease was also produced by a change in the state of the mind directly opposite to that which has been mentioned. Many persons that attended patients who recovered, were seized with the disease a day or two after they were relieved from the toils and anxiety of nursing. The collapse of the mind from the abstraction of the stimulus of hope and desire, by their ample gratification, probably produced that debility, and loss of the equilibrium in the system, which favoured the

activity of the miasmata in the manner formerly mentioned*.

The effects of both the states of mind which have been described, have been happily illustrated by two facts which are recorded by Dr. Jackson†. He tells us, that the garrisons of Savannah and York-Town were both healthy during the siege of those towns, but that the former became sickly as soon as the French and American armies retreated from before it, and the latter, immediately after its capitulation.

6. *Cold.* Its action, in exciting the disease, depended upon the diminution of the necessary and natural heat of the body, and thereby so far destroying the equilibrium of the system, as to enable the miasmata to produce excessive or convulsive motions in the blood-vessels. The night air, even in the warm month of September, was often so cool as to excite the disease, where the dress and bed-clothes were not accommodated to it. It was excited in one case by a person's only wetting his feet, in the month of October, and neglecting afterwards to change his shoes and stockings. Every change in the weather, that was short of producing

* Outlines of a Theory of Fever.

† Treatise on the Fevers of Jamaica, p. 298.

frost, evidently increased the number of sick people. This was obvious after the 18th and 19th of September, when the mercury fell to 44° and 45°. The hopes of the city received a severe disappointment upon this occasion, for I well recollect there was a general expectation that this change in the weather would have checked the disease. The same increase of the number of sick was observed to follow the cool weather which succeeded the 6th and 7th of October, on which days the mercury fell to 43° and 46°.

It was observed that those persons who were *habitually* exposed to the cool air, were less liable to the disease than others. I ascribe it to the *habitual* impression of the cool night air upon the bodies of the city watchmen, that but four or five of them, out of twenty-five, were affected by the disease.

After the body had been heated by violent exercise, a breeze of cool air sometimes excited the disease in those cases where there had been no change in the temperature of the weather.

7. *Sleep.* A great proportion of all who were affected by this fever, were attacked in the night. Sleep induced what I have called debility from ab-

straction, and thereby disposed the miasmata which floated in the blood, to act with such force upon the system as to destroy its equilibrium, and thus to excite a fever. The influence of sleep as a predisposing, and exciting cause was often assisted by the want of bed-clothes, suited to the midnight or morning coolness of the air.

8. *Immoderate evacuations.* The efficacy of moderate purging and bleeding in preventing the disease, led some people to use those remedies in an excess, which both predisposed to the disease, and excited it. The morbid effects of these evacuations, were much aided by fear, for it was this passion which perverted the judgment in such a manner, as to lead to the excessive use of remedies, which, to be effectual, should only be used in moderate quantities.

The disease appeared with different symptoms, and in different degrees, in different people. They both varied likewise with the weather. In describing the disease, I shall take notice of the changes in the symptoms, which were produced by changes in the temperature of the air.

The precursors, or premonitory signs of this fever were, costiveness, a dull pain in the right

side, defect of appetite, flatulency, perverted taste, heat in the stomach, giddiness, or pain in the head, a dull, watery, brilliant, yellow, or red eye, dim and imperfect vision, a hoarseness, or slight sore throat, low spirits, or unusual vivacity, a moisture on the hands, a disposition to sweat at nights, or after moderate exercise, or a sudden suppression of night sweats. The dull eye, and the lowness of spirits, appeared to be the effects of such an excess in the stimulus of the miasmata as to induce depression, while the brilliant eye, and the unusual vivacity, seemed to have been produced by a less quantity of the miasmata acting as a cordial upon the system. More or less of these symptoms frequently continued for two or three days before the patients were confined to their beds, and in some people they continued during the whole time of its prevalence in the city, without producing the disease. I wish these symptoms to be remembered by the reader. They will form the corner stone of a system which I hope will either eradicate the disease altogether, or render it as safe as an intermitting fever, or as the small-pox when it is received by inoculation.

Frequent as these precursors of the fever were, they were not universal. Many went to bed in good health, and awoke in the night with a chilly fit.

Many rose in the morning after regular and natural sleep, and were seized at their work, or after a walk, with a sudden and unexpected attack of the fever. In most of these cases the disease came on with a chilly fit, which afforded by its violence or duration a tolerable presage of the issue of the disease.

Upon entering a sick room where a patient was confined by this fever, the first thing that struck the eye of a physician was the countenance. It was as much unlike that which is exhibited in the common bilious fever, as the face of a wild, is unlike the face of a mild domestic animal. The eyes were sad, watery, and so inflamed, in some cases, as to resemble two balls of fire. Sometimes they had a most brilliant or ferocious appearance. The face was suffused with blood, or of a dusky colour, and the whole countenance was downcast and clouded. After the 10th of September, when a determination of blood to the brain became universal, there was a preternatural dilatation of the pupil. Sighing attended in almost every case. The skin was dry, and frequently of its natural temperature. These were the principal symptoms which discovered themselves to the eye and hand of a physician. The answers to the first questions proposed upon visiting a patient, were calculated to produce a belief in the mind of a physician, that the

disease under which the patient laboured was not the prevailing malignant epidemic. I did not for many weeks meet with a dozen patients, who acknowledged that they had any other indisposition than a common cold, or a slight remitting or intermitting fever. I was particularly struck with this self-deception in many persons, who had nursed relations that had died with the yellow fever, and who had been exposed to it in neighbourhoods where it had prevailed for days and even weeks with great mortality. I shall hereafter trace a part of this disposition in the sick to deceive themselves to the influence of certain publications, which appeared soon after the disease became epidemic in the city.

In the further history of this fever, I shall describe its symptoms as they appeared,

I. In the sanguiferous system.

II. In the liver, lungs, and brain.

III. In the alimentary canal; in which I include the stomach as well as the bowels.

IV. In the secretions and excretions.

V. In the nervous system.

VI. In the senses and appetites.

VII. In the lymphatic and glandular system.

VIII. Upon the skin.

IX. In the blood.

After having finished this detail, I shall mention some general characters of the disease, and afterwards subdivide it into classes, according to its degrees and duration.

I. The *blood-vessels* were affected more or less in every case of this fever. I have elsewhere said, that a fever is occasioned by a convulsion in the arterial system*. When the epidemic, which we are now considering, came on with a full, tense, and quick pulse, this convulsion was very perceptible; but it frequently came on with a weak pulse, often without any preternatural frequency or quickness, and sometimes so low as not to be perceived without pressing the artery at the wrists. In many cases the pulse intermitted after the fourth, in some

* Outlines of a Theory of Fever.

after the fifth, and in others after the fourteenth stroke. These intermissions occurred in several persons who were infected, but who were not confined by the fever. They likewise continued in several of my patients for many days after their recovery. This was the case in particular in Mrs. Clymer, Mrs. Palmer's son William, and in a son of Mr. William Compton. In some, there was a preternatural slowness of the pulse. It beat 44 strokes in a minute in Mr. B. W. Morris, 48 in Mr. Thomas Wharton, jun. and 64 in Mr. William Sansom, at a time when they were in the most imminent danger. Dr. Physick informed me, that in one of his patients the pulse was reduced in frequency to 30 strokes in a minute. All these different states of the pulse have been taken notice of by authors who have described pestilential fevers*. They have been improperly ascribed to the absence of fever: I would rather suppose that they are occasioned by the stimulus of the remote cause acting upon the arteries with too much force to admit of their being excited into quick and convulsive motions. The remedy which removed it (to be mentioned hereafter) will render this explanation of its cause still more probable. Milton describes

* Vergasca, Sorbait, and Boate in Haller's Bibliotheca Medicinæ, vol. iii. also by Dr. Stubbs in the Philosophical Transactions, and Riverius in his treatise de febre pestilenti.

a darkness from an excess of light. In like manner we observe, in this small, intermitting, and slow pulse, a deficiency of strength from an excess of force applied to it. In nearly every case of it which came under my notice, it was likewise tense or chorded. This species of pulse occurred chiefly in the month of August, and in the first ten days in September. I had met with it formerly in a sporadic case of yellow fever. It was new to all my pupils. One of them, Mr. Washington, gave it the name of the "undescribable pulse." It aided in determining the character of this fever before the common bilious remittent disappeared in the city. For a while, I ascribed this peculiarity in the pulse, more especially its *slowness*, to an affection of the brain only, and suspected that it was produced by what I have taken the liberty elsewhere to call the *phrenicula*, or inflammatory state of the internal dropsy of the brain, and which I have remarked to be an occasional symptom and consequence of remitting fever*. I was the more disposed to adopt this opinion, from perceiving this slow, chorded, and intermitting pulse more frequently in children than in adults. Impressed with this idea, I requested Mr. Coxe, one of my pupils, to assist me in examining the state of the

eyes. For two days we discovered no change in them, but on the third day after we began to inspect them, we both perceived a preternatural dilatation of the pupils, in different patients; and we seldom afterwards saw an eye in which it was absent. In Dr. Say it was attended by a squinting, a symptom which marks a high degree of a morbid affection of the brain. Had this slowness or intermission in the pulse occurred only after signs of inflammation or congestion had appeared in the brain, I should have supposed that it had been derived wholly from that cause; but I well recollect having felt it several days before I could discover the least change in the pupil of the eye. I am forced therefore to call in the operation of another cause, to assist in accounting for this state of the pulse, and this I take to be a spasmodic affection, accompanied with preternatural dilatation or contraction of the heart. Lieutaud mentions this species of pulse in several places, as occurring with an undue enlargement of that muscle*. Dr. Ferriar describes a case, in which a low, irregular, intermitting, and hardly perceptible pulse attended a morbid dilatation of the heart†. In a letter I received

* Historia Anatomica Medica, vol ii. obs. 405, 418, 423, 510.

† Medical Histories and Reflections, p. 150.

from Mr. Hugh Ferguson, then a student of medicine in the college of Edinburgh, written from Dublin, during the time of a visit to his father, and dated September 30th, 1793, I find a fact which throws additional light upon this subject. "A case (says my young correspondent) where a remarkable intermission of pulse was observed, occurred in this city last year. A gentleman of the medical profession, middle aged, of a delicate habit of body, and who had formerly suffered phthisical attacks, was attacked with the acute rheumatism. Some days after he was taken ill, he complained of uncommon fulness, and a very peculiar kind of sensation about the præcordia, which it was judged proper to relieve by copious blood-letting. This being done, the uneasiness went off. It returned, however, three or four times, and was as often relieved by bleeding. During each of his fits (if I may call them so), the patient experienced an almost total remission of his pains in his limbs; but they returned with equal or greater violence after blood-letting. During the fit there was an intermission of the pulse (the first time) of no less than thirteen strokes. It was when beating full, strong, and slow. The third intermission was of nine strokes. The gentleman soon recovered, and has enjoyed good health for ten months past. The opinion of some of his phy-

sicians was, that the heart was affected, as a muscle, by the rheumatism, and alternated with the limbs."

I am the more inclined to believe the peculiarity in the pulse which has been mentioned in the yellow fever, arose in part from a spasmodic affection of the heart, from the frequency of an uncommon palpitation of this muscle, which I discovered in this disease, more especially in old people. The disposition, likewise, to syncope and sighing, which so often occurred, can be explained upon no other principle than inflammation, spasm, dilatation, or congestion in the heart. After the 10th of September this undescribable or *sulky* pulse (for by the latter epithet I sometimes called it) became less observable, and, in proportion as the weather became cool, it totally disappeared. It was gradually succeeded by a pulse full, tense, quick, and as frequent as in pleurisy or rheumatism. It differed, however, from a pleuritic or rheumatic pulse, in imparting a very different sensation to the fingers. No two strokes seemed to be exactly alike. Its action was of a hobbling nature. It was at this time so familiar to me that I think I could have distinguished the disease by it without seeing the patient. It was remarkable that this pulse attended the yellow fever even when it appeared in the

mild form of an intermittent, and in those cases where the patients were able to walk about or go abroad. It was nearly as *tense* in the remissions and intermissions of the fever as it was in the exacerbations. It was an alarming symptom, and when the only remedy which was effectual to remove it was neglected, such a change in the system was induced as frequently brought on death in a few days.

This change of the pulse, from extreme lowness to fulness and activity, appeared to be owing to the diminution of the heat of the weather, which, by its stimulus, added to that of the remote cause, had induced those symptoms of depression of the pulse which have been mentioned.

The pulse most frequently lessened in its fulness, and became gradually weak, frequent, and imperceptible before death, but I met with several cases in which it was full, active, and even tense in the last hours of life.

Hæmorrhages belong to the symptoms of this fever as they appeared in the sanguiferous system. They occurred in the beginning of the disease, chiefly from the nose and uterus. Sometimes but a few drops of blood distilled from the nose. The

menses were unusual in their quantity when they appeared at their stated periods, but they often came on a week or two before the usual time of their appearance. I saw one case of a hæmorrhage from the lungs on the first day of the fever, which was supposed to be a common hæmoptysis. As the disease advanced the discharges of blood became more universal. They occurred from the gums, ears, stomach, bowels, and urinary passages. Drops of blood issued from the inner canthus of the left eye of Mr. Josiah Coates. Dr. Woodhouse attended a lady who bled from the holes in her ears which had been made by ear-rings. Many bled from the orifices which had been made by bleeding, several days after they appeared to have been healed, and some from wounds which had been made in veins in unsuccessful attempts to draw blood. These last hæmorrhages were very troublesome, and in some cases precipitated death.

II. I come now to mention the symptoms of this fever as they appeared in the *liver*, the *lungs*, and the *brain*. From the histories which I had read of this disease, I was early led to examine the state of the *liver*, but I was surprised to find so few marks of hepatic affection. I met with but two cases in which the patient could lie only on the

right side. Many complained of a dull pain in the region of the liver, but very few complained, in the beginning of the disease, of that soreness to the touch, about the pit of the stomach, which is taken notice of by authors, and which was universal in the yellow fever in 1762. In proportion as the cool weather advanced, a preternatural determination of the blood took place chiefly to the lungs and brain. Many were affected with pneumonic symptoms, and some appeared to die of sudden effusions of blood or serum in the lungs. It was an unexpected effusion of this kind which put an end to the life of Mrs. Keppele after she had exhibited hopeful signs of a recovery.

I saw one person who recovered from an affection of the lungs, by means of a copious expectoration of yellow phlegm and mucus. But the *brain* was principally affected with morbid congestion in this disease. It was indicated by the suffusion of blood in the face, by the redness of the eyes, by a dilatation of the pupils, by the pain in the head, by the hæmorrhages from the nose and ears, by the sickness or vomiting, and by an almost universal costive state of the bowels. I wish to impress the reader with these facts, for they formed one of the strongest indications for the use of the remedies which I adopted for the cure of this disease. It is

difficult to determine the exact state of these viscera in every case of bilious and yellow fever. Inflammation certainly takes place in some cases, and internal hæmorrhages in others; but I believe the most frequent affection of these viscera consists in a certain morbid accumulation of blood in them, which has been happily called, by Dr. Clark, an *engorgement* or choaking of the blood-vessels. I believe further, with Dr. Clark* and Dr. Balfour†, that death in most cases in bilious fevers is the effect of these morbid congestions, and wholly unconnected with an exhausted state of the system, or a supposed putrefaction in the fluids. It is true, the dissections of Dr. Physick and Dr. Cathrall (to be mentioned hereafter) discovered no morbid appearances in any of the viscera which have been mentioned, but it should be remembered, that these dissections were made early in the disease. Dr. Annan attended the dissection of a brain of a patient who died at Bush-hill some days afterwards, and observed the blood-vessels to be unusually turgid. In those cases where congestion only takes place, it is as easy to conceive that all morbid appearances in the brain may cease after death, as that the suffusion of blood in the face should dis-

* Vol. i. p. 168.

† Treatise on the Intestinal Remitting Fever, p. 125.

appear after the retreat of the blood from the extremities of the vessels, in the last moments of life. It is no new thing for morbid excitement of the brain to leave either slender, or no marks of disease after death. This, I have said, is often the case where it exceeds that degree of action which produces an effusion of red blood into serous vessels, or what is called inflammation*. Dr. Quin has given a dissection of the brain of a child that died with all the symptoms of hydrocephalus internus, and yet nothing was discovered in the brain but a slight turgescence of its blood-vessels. Dr. Girdlestone says, no injury appeared in the brains of those persons who died of the symptomatic apoplexy, which occurred in a spasmodic disease which he describes in the East-Indies; and Mr. Clark informs us, that the brain was in a natural state in every case of death from puerperile fever, notwithstanding it seemed to be affected in many cases soon after the attack of that disease†.

I wish it to be remembered here, that the yellow fever, like all other diseases, is influenced by climate and season. The determination of the fluids

* Outlines of a theory of fever.

† Essay on the Epidemic Disease of Lying-in Women, of the years 1787 and 1788, p. 34.

is seldom the same in different years, and I am sure it varied with the weather in the disease which I am now describing. Dr. Jackson speaks of the head being most affected in the West-India fevers in *dry* situations. Dr. Hillary says, that there was an unusual determination of the blood towards the brain, after a *hot* and *dry* season, in the fevers of Barbadoes in the year 1753; and Dr. Ferriar, in his account of an epidemic jail fever in Manchester, in 1789, 1790, informs us, that as soon as frost set in, a delirium became a more frequent symptom of that disease, than it had been in more temperate weather.

III. The *stomach* and *bowels* were affected in many ways in this fever. The disease seldom appeared without nausea or vomiting. In some cases, they both occurred for several days or a week before they were accompanied by any fever. Sometimes a pain, known by the name of gastrodynia, ushered in the disease. The stomach was so extremely irritable as to reject drinks of every kind. Sometimes green or yellow bile was rejected on the first day of the disease by vomiting; but I much oftener saw it continue for two days without discharging any thing from the stomach, but the drinks which were taken by the patient. If the fever in any case came on without vomiting,

or if it had been checked by remedies that were ineffectual to remove it altogether, it generally appeared, or returned, on the 4th or 5th day of the disease. I dreaded this symptom on those days, for although it was not always the forerunner of death, yet it generally rendered the recovery more difficult and tedious. In some cases the vomiting was more or less constant from the beginning to the end of the disease, whether it terminated in life or death.

The vomiting which came on about the 4th or 5th day, was accompanied with a burning pain in the region of the stomach. It produced great anxiety, and tossing of the body from one part of the bed to another. In some cases, this painful burning occured before any vomiting had taken place. Drinks were now rejected from the stomach so suddenly, as often to be discharged over the hand that lifted them to the head of the patient. The contents of the stomach (to be mentioned hereafter) were sometimes thrown up with a convulsive motion, that propelled them in a stream to a great distance, and in some cases all over the clothes of the by-standers.

Flatulency was an almost universal symptom, in every stage of this disease. It was very distres-

sing in many cases. It occurred chiefly in the stomach.

The *bowels* were generally costive, and in some patients as obstinately so as in the dry gripes. In some cases there was all the pain and distress of a bilious colic, and in others, the tenesmus, and mucous and bloody discharges of a true dysentery. A diarrhœa introduced the disease in a few persons, but it was chiefly in those who had been previously indisposed with weak bowels. A painful tension of the abdomen took place in many, accompanied in some instances by a dull, and in others by an acute pain in the lower part of the belly.

IV. I come now to describe the state of the *secretions* and *excretions* as they appeared in different stages of this fever.

In some cases there was a constipation of the liver, if I may be allowed that expression, or a total obstruction of secretion and excretion of bile, but more frequently a preternatural secretion and excretion of it took place. It was discharged, in most cases, from the stomach and bowels in large quantities, and of very different qualities and colours.

1. On the first and second days of the disease many patients puked from half a pint to nearly a quart of green or yellow bile. Four cases came under my notice in which black bile was discharged on the *first* day. Three of these patients recovered.

2. There was frequently, on the 4th or 5th day, a discharge of matter from the stomach, resembling coffee impregnated with its grounds. This was always an alarming symptom. I believed it at first to be a modification of vitiated bile, but subsequent dissections by Dr. Physick have taught me that it was the result of the first stage of those morbid actions in the stomach, which afterwards produce the black vomit. Many recovered who discharged this coffee-coloured matter.

3. Towards the close of this disease, there was a discharge of matter of a deep or pale black colour, from the stomach. Flakey substances frequently floated in the bason or chamber-pot upon the surface of this matter. It was what is called the *black vomit*. It was formerly supposed to be vitiated bile, but it has been proved by Dr. Stewart, and afterwards by Dr. Physick, to be the effect of disease in the stomach.

4. There was frequently discharged from the stomach in the close of the disease, a large quantity of grumous blood, which exhibited a dark colour on its outside, resembling that of some of the matters which have been described, and which I believe was frequently mistaken for what is commonly known by the name of the *black vomit*. Several of my patients did me the honour to say, I had cured them after that symptom of approaching dissolution had made its appearance; but I am inclined to believe, dark-coloured blood only, or the coffee-coloured matter, was mistaken for the matters which constitute the fatal black vomiting. I except here the black discharge before-mentioned, which took place in three cases on the first day of the disease. This I have no doubt was bile, but it had not acquired its greatest acrimony, and it was discharged before mortification, or even inflammation could have taken place in the stomach. Several persons died without a black vomiting of any kind.

Along with all the discharges from the stomach which have been described, there was occasionally a large worm, and frequently large quantities of mucus and tough phlegm.

The colour, quality, and quantity of the *fæces* depended very much upon the treatment of the dis-

ease. Where active purges had been given, the stools were copious, fœtid, and of a black or dark colour. Where they were spontaneous, or excited by weak purges, they had a more natural appearance. In both cases they were sometimes of a green, and sometimes of an olive colour. Their smell was more or less fœtid, according to the time in which they had been detained in the bowels. I visited a lady who had passed several days without a stool, and who had been treated with tonic remedies. I gave her a purge, which in a few hours procured a discharge of fæces so extremely fœtid, that they produced fainting in an old woman who attended her. The acrimony of the fæces was such as to excoriate the rectum, and sometimes to produce an extensive inflammation all around its external termination. The quantity of the stools produced by a single purge was in many cases very great. They could be accounted for only by calling in the constant and rapid formation of them, by preternatural effusions of bile into the bowels.

I attended one person, and heard of two others, in whom the stools were as white as in the jaundice. I suspected, in these cases, the liver to be so constipated or paralyzed by the disease, as to be unable to secrete or excrete bile to colour the

fæces. Large round worms were frequently discharged with the stools.

The *urine* was in some cases plentiful, and of a high colour. It was at times clear, and at other times turbid. About the 4th or 5th day, it sometimes assumed a dark colour, and resembled strong coffee. This colour continued, in one instance, for several days after the patient recovered. In some, the discharge was accompanied by a burning pain, resembling that which takes place in a gonorrhœa. I met with one case in which this burning came on only in the evening, with the exacerbation of the fever, and went off with its remission in the morning.

A total deficiency of the urine took place in many people for a day or two, without pain. Dr. Sydenham takes notice of the same symptom in the highly inflammatory small-pox*. It generally accompanied or portended great danger. I heard of one case in which there was a *suppression* of urine, which could not be relieved without the use of the catheter.

* Wallis's edition, vol. i. p. 197.

A young man was attended by Mr. Fisher, one of my pupils, who discharged several quarts of limpid urine just before he died.

Dr. Arthaud informs us, in the history of a dissection of a person who died of the yellow fever, that the urine after death imparted a green colour to the tincture of radishes*.

Many people were relieved by copious *sweats* on the first day of the disease. They were in some instances spontaneous, and in others they were excited by diluting drinks, or by strong purges. These sweats were often of a yellow colour, and sometimes had an offensive smell. They were in some cases cold, and attended at the same time with a full pulse. In general, the skin was dry in the beginning, as well as in the subsequent stages of the disease. I saw but few instances of its terminating like common fevers, by sweat after the third day. I wish this fact to be remembered by the reader, for it laid part of the foundation of my method of treating this fever.

There was in some cases a preternatural secretion and excretion of *mucus* from the glands of

* Rosier's Journal for January, 1790, vol. xxxvi. p. 380.

the throat. It was discharged by an almost constant hawking and spitting. All who had this symptom recovered.

The *tongue* was in every case moist, and of a white colour, on the first and second days of the fever. As the disease advanced, it assumed a red colour, and a smooth shining appearance. It was not quite dry in this state. Towards the close of the fever, a dry black streak appeared in its middle, which gradually extended to every part of it. Few recovered after this appearance on the tongue took place.

V. In the *nervous system* the symptoms of the fever were different, according as it affected the brain, the muscles, the nerves, or the mind. The sudden and violent action of the miasmata induced apoplexy in several people. In some, it brought on syncope, and in others, convulsions in every part of the body. The apoplectic cases generally proved fatal, for they fell chiefly upon hard drinkers. Persons affected by syncope, or convulsions, sometimes fell down in the streets. Two cases of this kind happened near my house. One of them came under my notice. He was supposed by the bye-standers to be drunk, but his countenance and con-

vulsive motions soon convinced me that this was not the case.

A coma was observed in some people, or an obstinate wakefulness in every stage of the disease. The latter symptom most frequently attended the convalescence. Many were affected with immobility, or numbness in their limbs.

These symptoms were constant, or temporary, according to the nature of the remedies which were made use of to remove them. They extended to all the limbs, in some cases, and only to a part of them in others. In some, a violent cramp, both in the arms and legs, attended the first attack of the fever. I met with one case in which there was a difficulty of swallowing, from a spasmodic affection of the throat, such as occurs in the locked jaw.

A hiccup attended the last stage of this disease, but I think less frequently than the last stage of the common bilious fever. I saw but five cases of recovery where this symptom took place.

There was, in some instances, a deficiency of sensibility, but, in others, a degree of it extending to every part of the body, which rendered the ap-

plication of common rum to the skin, and even the least motion of the limbs painful.

I was surprised to observe the last stage of this fever to exhibit so few of the symptoms of the common typhus or chronic fever. Tremors of the limbs and twitchings of the tendons were uncommon. They occurred only in those cases in which there was a predisposition to nervous diseases, and chiefly in the convalescent state of the disease.

While the muscles and nerves in many cases exhibited so many marks of preternatural weakness, in some they appeared to be affected with preternatural excitement. Hence patients in the close of the disease often rose from their beds, walked across their rooms, or came down stairs, with as much ease as if they had been in perfect health. I lost a patient in whom this state of morbid strength occurred to such a degree, that he stood up before his glass and shaved himself, on the day on which he died.

The mind suffered with the morbid states of the brain and nerves. A delirium was a common symptom. It alternated in some cases with the exacerbations and remissions of the fever. In

some, it continued without a remission, until a few hours before death. Many, however, passed through the whole course of the disease without the least derangement in their ideas, even where there were evident signs of a morbid congestion in the brain. Some were seized with maniacal symptoms. In these there was an *apparent* absence of fever. Such was the degree of this mania in one man, that he stripped off his shirt, left his bed, and ran through the streets, with no other covering than a napkin on his head, at 8 o'clock at night, to the great terror of all who met him. The symptoms of mania occurred most frequently towards the close of the disease, and sometimes continued for many days and weeks, after all other febrile symptoms had disappeared.

The temper was much affected in this fever. There were few in whom it did not produce great depression of spirits. This was the case in many, in whom pious habits had subdued the fear of death. In some the temper became very irritable. Two cases of this kind came under my notice, in persons who, in good health, were distinguished for uncommon sweetness of disposition and manners.

I observed in several persons the operations of the understanding to be unimpaired, throughout the whole course of the fever, who retained no remembrance of any thing that passed in their sickness. My pupil, Mr. Fisher, furnished a remarkable example of this correctness of understanding, with a suspension of memory. He neither said nor did any thing, during his illness, that indicated the least derangement of mind, and yet he recollected nothing that passed in his room, except my visits to him. His memory awakened upon my taking him by the hand, on the morning of the 6th day of his disease, and congratulating him upon his escape from the grave.

In some, there was a weakness, or total defect of memory, for several weeks after their recovery. Dr. Woodhouse informed me that he had met with a woman, who, after she had recovered, could not recollect her own name.

Perhaps it would be proper to rank that self-deception with respect to the nature and danger of the disease, which was so universal, among the instances of derangement of mind.

The pain which attended the disease was different, according to the different states of the system.

In those cases in which it sunk under the violence of the disease, there was little or no pain. In proportion as the system was relieved from this oppression, it recovered its sensibility. The pain in the head was acute and distressing. It affected the eye-balls in a peculiar manner. A pain extended, in some cases, from the back of the head down the neck. The ears were affected, in several persons, with a painful sensation, which they compared to a string drawing their two ears together through the brain. The sides, and the regions of the stomach, liver, and bowels, were all, in different people, the seats of either dull or acute pains. The stomach, towards the close of the disease, was affected with a burning or spasmodic pain of the most distressing nature. It produced, in some cases, great anguish of body and mind. In others it produced cries and shrieks, which were often heard on the opposite side of the streets to where the patients lay. The back suffered very much in this disease. The stoutest men complained, and even groaned under it. An acute pain extended, in some cases, from the back to one or both thighs. The arms and legs sympathized with every other part of the body. One of my patients, upon whose limbs the disease fell with its principal force, said that his legs felt as if they had been scraped with a sharp instrument. The sympathy of friends with

the distresses of the sick extended to a small part of their misery, when it did not include their sufferings from pain. One of the dearest friends I ever lost by death declared, in the height of her illness, that "no one knew the pains of a yellow fever, but those who felt them."

VI. The *senses* and *appetites* exhibited several marks of the universal ravages of this fever upon the body. A deafness attended in many cases, but it was not often, as in the nervous fever, a favourable symptom. A dimness of sight was very common in the beginning of the disease. Many were affected with temporary blindness. In some there was a loss of sight in consequence of gutta serena, or a total destruction of the substance of the eye. There was in many persons a soreness to the touch which extended all over the body. I have often observed this symptom to be the forerunner of a favourable issue of a nervous fever, but it was less frequently the case in this disease.

The *thirst* was moderate or absent in some cases, but it occurred in the greatest number of persons whom I saw in this fever. Sometimes it was very intense. One of my patients, who suffered by an excessive draught of cold water, declared, just before he died, that "he could drink

up the Delaware." It was always an alarming symptom when this thirst came on in this extravagant degree in the last stage of the disease. In the beginning of the fever it generally abated upon the appearance of a moist skin. Water was preferred to all other drinks.

The *appetite* for food was impaired in this, as in all other fevers, but it returned much sooner than is common after the patient began to recover. Coffee was relished in the remissions of the fever, in every stage of the disease. So keen was the appetite for solid, and more especially for animal food, after the solution of the fever, that many suffered from eating aliment that was improper from its quality or quantity. There was a general disrelish for wine, but malt liquors were frequently grateful to the taste.

Many people retained a relish for tobacco much longer after they were attacked by this fever, and acquired a relish for it much sooner after they began to recover, than are common in any other febrile disease. I met with one case in which a man, who was so ill as to require two bleedings, continued to chew tobacco through every stage of his fever.

The convalescence from this disease was marked, in some instances, by a sudden revival of the venereal appetite. Several weddings took place in the city between persons who had recovered from the fever. Twelve took place among the convalescents in the hospital at Bush-hill. I wish I could add that the passion of the sexes for each other, among those subjects of public charity, was always gratified only in a lawful way. Delicacy forbids a detail of the scenes of debauchery which were practised near the hospital, in some of the tents which had been appropriated for the reception of convalescents. It was not peculiar to this fever to produce this morbid excitability of the venereal appetite. It was produced in a much higher degree by the plague which raged in Messina in the year 1743.

VII. The *lymphatic* and *glandular system* did not escape without some signs of this disease. I met with three cases of swellings in the inguinal, two in the parotid, and one in the cervical glands: all these patients recovered without a suppuration of their swellings. They were extremely painful in one case in which no redness or inflammation appeared. In the others there was considerable inflammation and but little pain.

In one of the cases of inguinal buboes, the whole force of the disease seemed to be collected into the lymphatic system. The patient walked about, and had no fever nor pain in any part of his body, except in his groin. In another case which came under my care, a swelling and pain extended from the groin along the spermatic cord into one of the testicles. These glandular swellings were not peculiar to this epidemic. They occurred in the yellow fever of Jamaica, as described by Dr. Williams, and always with a happy issue of the disease*. A similar concentration of the contagion of the plague in the lymphatic glands is taken notice of by Dr. Patrick Russel.

VIII. The *skin* exhibited many marks of this fever. It was preternaturally warm in some cases, but it was often preternaturally cool. In some there was a distressing coldness in the limbs for two or three days. The yellow colour from which this fever has derived its name, was not universal. It seldom appeared where purges had been given in sufficient doses. The yellowness rarely appeared before the third, and generally about the fifth or seventh day of the fever. Its early appearance always denoted great danger. It sometimes appeared

* Essay on the Bilious or Yellow Fever, p. 35.

first on the neck and breast, instead of the eyes. In one of my patients it discovered itself first behind one of his ears, and on the crown of his head, which had been bald for several years. The remissions and exacerbations of the fever seemed to have an influence upon this colour, for it appeared and disappeared altogether, or with fainter or deeper shades of yellow, two or three times in the course of the disease. The eyes seldom escaped a yellow tinge; and yet I saw a number of cases in which the disease appeared with uncommon malignity and danger, without the presence of this symptom.

There was a clay-coloured appearance in the face, in some cases, which was very different from the yellow colour which has been described. It occurred in the last stage of the fever, and in no instance did I see a recovery after it.

There were eruptions of various kinds on the skin, each of which I shall briefly describe.

1. I met with two cases of an eruption on the skin, resembling that which occurs in the scarlet fever. Dr. Hume says, pimples often appear on the pit of the stomach, in the yellow fever of Jamaica. I examined the external region of the sto-

mach in many of my patients, without discovering them.

2. I met with one case in which there was an eruption of watery blisters, which, after bursting, ended in deep, black sores.

3. There was an eruption about the mouth in many people, which ended in scabs, similar to those which take place in the common bilious fever. They always afforded a prospect of a favourable issue of the disease.

4. Many persons had eruptions which resembled moscheto bites. They were red and circumscribed. They appeared chiefly on the arms, but they sometimes extended to the breast. Like the yellow colour of the skin, they appeared and disappeared two or three times in the course of the disease.

5. Petechiæ were common in the latter stage of the fever. They sometimes came on in large, and at other times in small red blotches; but they soon acquired a dark colour. In most cases they were the harbingers of death.

6. Several cases of carbuncles, such as occur in the plague, came under my notice. They were large and hard swellings on the limbs, with a black apex, which, upon being opened, discharged a thin, dark-coloured, bloody matter. From one of these malignant sores a hæmorrhage took place, which precipitated the death of the amiable widow of Dr. John Morris.

7. A large and painful anthrax on the back succeeded a favourable issue of the fever in the Rev. Dr. Blackwell.

8. I met with a woman who showed me the marks of a number of small boils on her face and neck, which accompanied her fever.

Notwithanding this disposition to cutaneous eruptions in this disease, it was remarkable that blisters were much less disposed to mortify than in the common nervous fever. I met with only one case in which a deep-seated ulcer followed the application of blisters to the legs. Such was the insensibility of the skin in some people, that blisters made no impression upon it.

IX. The *blood* in this fever has been supposed to undergo a change from a healthy to a putrid state,

and many of its symptoms which have been described, particularly the hæmorrhages and eruptions on the skin, have been ascribed to this supposed putrefaction of the blood. It would be easy to multiply arguments, in addition to those mentioned in another place*, to prove that no such thing as putrefaction can take place in the blood, and that the symptoms which have been supposed to prove its existence are all effects of a sudden, violent, and rapid inflammatory action or pressure upon the blood-vessels, and hence the external and internal hæmorrhages. The petechiæ on the surface of the skin depend upon the same cause. They are nothing but effusions of serum or red blood, from a rupture or preternatural dilatation of the capillary vessels†. The smell emitted from persons affected by this disease was far from being of a putrid nature; and if this had been the case, it would not have proved the existence of putrefaction in the blood, for a putrid smell is often discharged from the lungs, and from the pores in sweat, which is

* Outlines of a Theory of Fever.

† See Wallis's edition of Sydenham, vol. i. p. 165. vol. ii. p. 52, 94, 98, 350; De Haen's Ratio Medendi, vol. ii. p. 162. vol. iv. p. 172; Gaubii Pathologia, sect. 498; and Dr. Seybert's inaugural dissertation, entitled "An Attempt to Disprove the Doctrine of Putrefaction of the Blood in Living Animals," published in Philadelphia in 1793.

wholly unconnected with a putrid, or perhaps any other morbid state of the blood. There are plants which discharge an odour which conveys to the nose a sensation like that of putrefaction; and yet these plants exist, at the same time, in a state of the most healthy vegetation: nor does the early putrid smell of a body which perishes with this fever prove a putrid change to have taken place in the blood before death. All animals which die suddenly, and without loss of blood, are disposed to a speedy putrefaction. This has long been remarked in animals that have been killed after a chace, or by lightning. The poisonous air called *samiel*, which is described by Chardin, produces, when it destroys life, instant putrefaction. The bodies of men who die of violent passions, or after strong convulsions, or even after great muscular exertion, putrify in a few hours after death. The healthy state of the body depends upon a certain state of arrangement in the fluids. A derangement of these fluids is the natural consequence of the violent and rapid motions, or of the undue pressure upon the solids, which have been mentioned. It occurs in cases of death which are induced by the excessive force of stimulus, whether it be from miasmata, or the volatile vitriolic acid which is supposed to constitute the destructive samiel wind, or from violent commotions excited in the body by

external or internal causes. The practice among fishermen, in some countries, of breaking the heads of their fish as soon as they are taken out of the water, in order to retard their putrefaction, proves the truth of the explanation I have given of its cause, soon after death. The sudden extinction of life in the fish prevents those convulsive or violent motions, which induce sudden *disorganization* in their bodies. It was observed that putrefaction took place most speedily after death from the yellow fever, where the commotions of the system were not relieved by evacuations. In those cases where purges and bleeding had been used, putrefaction did not take place sooner after death than is common in any other febrile disease, under equal circumstances of heat and air.

Thus have I described the symptoms of this fever. From the history I have given, it appears that it counterfeited nearly all the acute and chronic forms of disease to which the human body is subject. An epitome, both of its symptoms and its theory, is happily delivered by Dr. Sydenham, in the following words. After describing the epidemic cough, pleurisy, and peripneumony of 1675, he adds, " But in other epidemics, the symptoms are so slight from the disturbance raised in the blood by the morbific particles contained in the

mass, that nature being in a manner *oppressed*, is rendered unable to produce *regular* symptoms that are suitable to the disease; and almost all the phenomena that happen are *irregular*, by reason of the entire *subversion* of the animal economy; in which case the fever is often *depressed*, which, of its own nature, would be very high. Sometimes also fewer signs of a fever appear than the nature of the disease requires, from a translation of the malignant cause, either to the nervous system, or to some other parts of the body, or to some of the juices not contained in the blood; whilst the morbific matter is yet turgid*."

The disease ended in death in various ways. In some it was sudden; in others it came on by gradual approaches. In some the last hours of life were marked with great pain, and strong convulsions; but in many more, death seemed to insinuate itself into the system, with all the gentleness of natural sleep. Mr. Powell expired with a smile on his countenance. Dr. Griffitts informed me that Dr. Johnson exhibited the same symptom in the last hours of his life. This placid appearance of the countenance, in the act of dying, was not new to me. It frequently occurs in diseases which

* Wallis's edition, vol. i. p. 344.

affect the brain and nerves. I lost a patient, in the year 1791, with the gout, who not only smiled, but laughed, a few minutes before he expired.

I proceed now to mention some peculiarities of the fever, which could not be brought in under any of the foregoing heads.

In every case of this disease which came under my notice, there were evident remissions, or intermissions of the fever, or of such symptoms as were substituted for fever. I have long considered, with Mr. Senac, a *tertian* as the only original type of all fevers. The bilious yellow fever indicated its descent from this parent disease. I met with many cases of regular tertians, in which the patients were so well on the intermediate days as to go abroad. It appeared in this form in Mr. Van Berkel, the minister of the United Netherlands. Nor was this mild form of the fever devoid of danger. Many died who neglected it, or who took the common remedies for intermittents to cure it. It generally ended in a remittent before it destroyed the patient. The tertian type discovered itself in some people after the more violent symptoms of the fever had been subdued, and continued in them for several weeks. It changed from a tertian to a quartan type in Mr. Thomas Willing, nearly a

month after his recovery from the more acute and inflammatory symptoms of the disease.

It is nothing new for a malignant fever to appear in the form of a tertian. It is frequently the garb of the plague. Riverius describes a tertian fever which proved fatal on the third day, which was evidently derived from the same exhalation which produced a continual malignant fever*.

The remissions were more evident in this, than in the common bilious fever. They generally occurred in the forenoon. It was my misfortune to be deprived, by the great number of my patients, of that command of time which was necessary to watch the exacerbations of this fever under all their various changes, as to time, force, and duration. From all the observations that were suggested by visits, at hours that were seldom left to my choice, I was led to conclude, that the fever exhibited in different people all that variety of forms which has been described by Dr. Cleghorn, in his account of the tertian fever of Minorca. A violent exacerbation on even days was evidently attended with more danger than on odd days. The same thing was observed by Dr. Mitchell in the yellow fever of Virginia,

* De Febre Pestilenti, vol. xi. p. 93.

in the year 1741. "If (says he) the exacerbations "were on equal days, they generally died in the "third paroxysm, or the sixth day; but if on un-"equal days, they recovered on the seventh."

The deaths which occurred on the 3d, 5th, and 7th days, appeared frequently to be the effects of the commotions or depression, produced in the system on the 2d, 4th, and 6th days.

The remission on the third day was frequently such as to beget a belief that the disease had run its course, and that all danger was over. A violent attack of the fever on the 4th day removed this deception, and, if a relaxation had taken place in the use of proper remedies on the 3d day, death frequently occurred on the 5th or the 7th.

The termination of this fever in life and death was much more frequent on the 3d, 5th, 7th, 9th, and 11th days, than is common in the mild remitting fever. Where death occurred on the even days, it seemed to be the effect of a violent paroxysm of the fever, or of great vigour of constitution, or of the force of medicines which protracted some of the motions of life beyond the close of the odd days which have been mentioned.

I think I observed the fever to terminate on the third day more frequently in August, and during the first ten days in September, than it did after the weather became cool. In this it resembled the common bilious remittents of our city, also the simple tertians described by Dr. Cleghorn*. The danger seemed to be in proportion to the tendency of the disease to a speedy crisis, hence more died in August in proportion to the number who were affected than in September or October, when the disease was left to itself. But, however strange after this remark it may appear, the disease yielded to the remedies which finally subdued it more speedily and certainly upon its first appearance in the city, than it did two or three weeks afterwards.

The disease continued for fifteen, twenty, and even thirty days in some people. Its duration was much influenced by the weather, and by the use or neglect of certain remedies (to be mentioned hereafter) in the first stage of the disease.

It has been common with authors to divide the symptoms of this fever into three different stages. The order I have pursued in the history of those symptoms will render this division unnecessary.

* Diseases of Minorca, p. 185.

It will I hope be more useful to divide the patients affected with the disease into three classes.

The *first* includes those in whom the stimulus of the miasmata produced coma, languor, sighing, a disposition to syncope, and a weak or slow pulse.

The *second* includes those in whom the miasmata acted with less force, producing great pain in the head, and other parts of the body; delirium, vomiting, heat, thirst, and a quick, tense, or full pulse, with obvious remissions or intermissions of the fever.

The *third* class includes all those persons in whom the miasmata acted so feebly as not to confine them to their beds or houses. This class of persons affected by the yellow fever was very numerous. Many of them recovered without medical aid, or by the use of domestic prescriptions; many of them recovered in consequence of a spontaneous diarrhœa, or plentiful sweats; many were saved by moderate bleeding and purging; while some died, who conceived their complaints to be occasioned by a common cold, and neglected to take proper care of themselves, or to use the necessary means for their recovery. It is not peculiar to the yellow fever to produce this feeble operation up-

on the system, It has been observed in the southern states of America, that in those seasons in which the common bilious fever is epidemic " no body is quite well," and that what are called in those states " inward fevers" are universal. The small-pox, even in the natural way, does not always confine the patient; and thousands pass through the plague without being confined to their beds or houses. Dr. Hodges prescribed for this class of patients in his parlour in London, in the year 1665, and Dr. Patrick Russel did the same from a chamber window fifteen feet above the level of the street at Aleppo. Notwithstanding the mild form the plague put on in these cases, it often proved fatal according to Dr. Russel. I have introduced these facts chiefly with a view of preparing the reader to reject the opinion that we had two species of fever in the city at the same time; and to show that the yellow fever appears in a more simple form than with " strongly marked" characters; or, in other words, with a yellow skin and a black vomiting.

It was remarkable that this fever always found out the weak part of every constitution it attacked. The head, the lungs, the stomach, the bowels, and the limbs, suffered more or less, according as they were more or less debilitated by previous

inflammatory or nervous diseases, or by a mixture of both, as in the gout.

I have before remarked, that the influenza, the scarlatina, and a mild bilious remittent, prevailed in the city, before the yellow fever made its appearance. In the course of a few weeks they all disappeared, or appeared with symptoms of the yellow fever; so that, after the first week of September, it was the solitary epidemic of the city.

The only case like influenza which I saw after the 5th of September, was in a girl of 14 years of age, on the 13th of the month. It came on with a sneezing and cough. I was called to her on the third day of her disease. The instant I felt her pulse, I pronounced her disease to be the yellow fever. Her father was offended with this opinion, although he lived in a highly infected neighbourhood, and objected to the remedies I prescribed for her. In a few days she died. In the course of ten days, her father and sister were infected, and both died, I was informed, with the usual symptoms of the yellow fever.

It has been an axiom in medicine, time immemorial, that no two fevers of unequal force can exist long together in the same place. As this

axiom seems to have been forgotten by many of the physicians of Philadelphia, and as the ignorance or neglect of it led to that contrariety of opinion and practice, which unhappily took place in the treatment of the disease, I hope I shall be excused by those physicians to whom this fact is as familiar as the most simple law of nature, if I fill a few pages with proofs of it, from practical writers.

Thucydides long ago remarked, that the plague chased all other diseases from Athens, or obliged them to change their nature, by assuming some of its symptoms.

Dr. Sydenham makes the same remark upon the plague in London, in 1665. Dr. Hodges, in his account of the same plague, says, that "at the rise of the plague all other distempers went into it, but that, at its declension, it degenerated into others, as inflammations, head-ach, quinsies, dysenteries, small-pox, measles, fevers, and hectics, wherein the plague yet predominated*."

During the prevalence of the plague in Grand Cairo, no sporadic disease of any kind makes its appearance. The same observation is made by

* Dr. Hodge's Account of the Plague in London, p. 26.

Sauvage, in his account of the plague at Alais, in the province of Languedoc*.

The small-pox, though a disease of less force than the plague, has often chased it from Constantinople, probably from its being in a declining state. But this exclusive prevalence of a single epidemic is not confined to the plague and small-pox. Dr. Sydenham's writings are full of proofs of the dominion of febrile diseases over each other. Hence, after treating upon a symptomatic pleurisy which sometimes accompanied a slow fever, in the year 1675, and which had probably been injudiciously treated by some of those physicians who prescribe for the name of a disease, he delivers the following aphorism: "Whoever, in the cure of fevers, hath not always in view the constitution of the year, inasmuch as it tends to produce some particular epidemic disease, and likewise to reduce all the cotemporary diseases to its own form and likeness, proceeds in an uncertain and fallacious way†." It appears further, from the writings of this excellent physician, that where the monarchy of a single disease was not immediately acknow-

* Sed hoc observatu dignum fuit, omnes alios morbos acutos, durante peste siluisse, et omnes morbos acutos e pestis genere suisse. Nosologia Methodica, vol. i. p. 416.

† Vol. i. p. 340.

ledged, by a sudden retreat of all cotemporary diseases, they were forced to do homage to it, by wearing its livery. It would be easy to multiply proofs of this assertion, from the numerous histories of epidemics which are to be found in his works. I shall mention only one or two of them. A continual fever, accompanied by a dry skin, had prevailed for some time in the city of London. During the continuance of this fever, the regular small-pox made its appearance. It is peculiar to the small-pox, when of a distinct nature, to be attended by irregular sweats before the eruption of the pock. The continual fever now put on a new symptom. It was attended by sweats in its first stage, exactly like those which attended the eruptive fever of the small-pox*. This despotism of a powerful epidemic extended itself to the most trifling indispositions. It even blended itself, Dr. Sydenham tells us, with the commotions excited in the system by the suppression of the lochia, as well as with the common puerperile fever†. Dr. Morton has left testimonies behind him, in different parts of his works, which establish, in the most ample manner, the truth of Dr. Sydenham's ob-

* Vol. i. p. 352.

† Vol. ii. p. 164. See also p. 1, 109, 122, 204, 212, 233, 274, 355, 358-9, and 436.

servations. Dr. Huxham describes the small-pox as blending some of its symptoms with those of a slow fever, at Plymouth, in the year 1729*. Dr. Cleghorn mentions a constitution of the air at Minorca, so highly inflammatory, "that not only tertian fevers, but even a common hurt or bruise required more plentiful evacuations than ordinary†." Riverius informs us, in his history of a pestilential fever that prevailed in France, that "it united itself with phrenitis, angina, pleurisy, peripneumony, hepatitis, dysentery, and many other diseases‡."

The bilious remitting fever which prevailed in Philadelphia, in 1780, chased away every other febrile disease; and the scarlatina anginosa which prevailed in our city, in 1783 and 1784, furnished a striking proof of the influence of epidemics over each other. In the account which I published of this disease, in the year 1789, there are the following remarks. "The intermitting fever which made its appearance in August was not lost during the month of September. It continued to prevail, but with several peculiar symptoms. In many persons it was accompanied by an eruption

* De Aere et Morb. Epidem. p. 33, 34.

† Page 285.

‡ De Febre Pestilenti, vol. ii. p. 95.

on the skin, and a swelling of the hands and feet. In some it was attended with sore throat, and pains behind the ears. Indeed such was the prevalence of the contagion which produced the scarlatina anginosa, that many hundred people complained of sore throats, without any other symptom of indisposition. The slightest exciting cause, and particularly cold, seldom failed of producing the disease*."

I shall mention only one more authority in favour of the influence of a single epidemic upon diseases. It is taken from Mr. Clark's essay on the epidemic disease of lying-in women, of the years 1787 and 1788. "There does not appear to be any thing in a parturient state which can prevent women from being affected by the general causes of disease at that time; and should they become ill, their complaints will probably partake of the nature of the reigning epidemic*." I have said that the fever sometimes put on the symptoms of dysentery, pleurisy, rheumatism, colic, palsy, and even of the locked jaw. That these were not original diseases, but symptomatic affections only

* Vol. i.

* Page 28.

of the reigning epidemic, will appear from other histories of bilious fevers. Dr. Balfour tells us, in his account of the intestinal remitting fever of Bengal*, that it often appeared with symptoms of dysentery, rheumatism, and pleurisy. Dr. Cleghorn and Dr. Lind mention many cases of the bilious fever appearing in the form of a dysentery. Dr. Clark ascribes the dysentery, the diarrhœa, the colic, and even the palsy, to the same cause which produced the bilious fever in the East-Indies†; and Dr. Hunter, in his treatise upon the diseases of Jamaica, mentions the locked jaw as one of its occasional symptoms. Even the different grades of this fever, from the mildest intermittent to the most acute continual fever, have been distinctly traced by Lancissi to the same marsh exhalation‡.

However irrefragably these numerous facts and authorities establish the assertion of the prevalence of but one powerful epidemic at a time, the proposition will receive fresh support, from attending to the effects of two impressions of unequal force made

* Page 132.

† Observations on the Diseases in Long Voyages to the East-Indies, vol. i. p. 13, 14, 48, 151. vol. ii. p. 99, 318, and 320.

‡ Lib. ii. cap. v.

upon the system at the same time: only one of them is felt; hence the gout is said to cure all other diseases. By its superior pain it destroys sensations of a less painful nature. The small-pox and measles have sometimes existed together in the body; but this has, I believe, seldom occurred, where one of them has not been the predominating disease*. In this respect, this combination of epidemics only conforms to the general law which has been mentioned.

I beg pardon for the length of this digression. I did not introduce it to expose the mistakes of those physicians, who found as many diseases in our city as the yellow fever had symptoms, but to vindicate myself from the charge of innovation, in having uniformly and unequivocally asserted, after the first week in September, that the yellow fever was the only febrile disease which prevailed in the city.

Science has much to deplore from the multiplication of diseases. It is as repugnant to truth in medicine, as polytheism is to truth in religion. The physician who considers every different affection of the different systems in the body, or every

* Hunter on the Venereal Disease, introduction, p. 3.

affection of different parts of the same system, as distinct diseases, when they arise from one cause, resembles the Indian or African savage, who considers water, dew, ice, frost, and snow, as distinct essences; while the physician who considers the morbid affections of every part of the body (however diversified they may be in their form or degrees) as derived from one cause, resembles the philosopher who considers dew, ice, frost, and snow, as different modifications of water, and as derived simply from the absence of heat.

Humanity has likewise much to deplore from this paganism in medicine. The sword will probably be sheathed for ever, as an instrument of death, before physicians will cease to add to the mortality of mankind, by prescribing for the names of diseases.

The facts I have delivered upon this subject will admit of a very important application to the cure, not only of the yellow fever, but of all other acute and dangerous epidemics. I shall hereafter assign a final cause for the law of epidemics which has been mentioned, which will discover a union of the goodness of the Supreme Being with one of the greatest calamities of human life.

All ages were affected by this fever, but persons between fourteen and forty years of age were most subject to it. Many old people had it, but it was not so fatal to them as to robust persons in middle life. It affected children of all ages. I met with a violent case of the disease, in a child of four months, and a moderate case of it, in a child of but ten weeks old. The latter had a deep yellow skin. Both these children recovered.

The proportion of children who suffered by this fever may be conceived from a single fact. Seventy-five persons were buried in the grave-yard of the Swedish church in the months of August, September, and October, twenty-four of whom were children. They were buried chiefly in September and October; months in which children generally enjoy good health in our city.

Men were more subject to the disease than women. Pregnancy seemed to expose women to it.

The refugees from the French West-Indies universally escaped it. This was not the case with the natives of France, who had been settled in the city.

It is nothing new for epidemics to affect persons of one nation, and to pass by persons of other nations, in the same city or country. At Nimeguen, in the year 1736, Deigner informs us, that the French people (two old men excepted), and the Jews, escaped a dysentery which was universal among persons of all other nations. Ramazini tells us, that the Jews at Modena escaped a tertian fever which affected nearly all the other inhabitants of the town. Shenkius says, that the Dutch and Italians escaped a plague, which prevailed for two years in one of the towns of Switzerland; and Dr. Bell, in an inaugural dissertation, published at Edinburgh, in 1779, remarks, that the jail fever, which attacked the soldiers of the duke of Buccleugh's regiment, spared the French prisoners who were guarded by them. It is difficult to account for these facts. However numerous their causes may be, a difference in diet, which is as much a distinguishing mark of nations as dress or manners, will probably be found to be one of them.

From the accounts of the yellow fever which had been published by many writers, I was led to believe that the negroes in our city would escape it. In consequence of this belief, I published the following extract in the American Daily Advertiser, from Dr. Lining's history of the yellow fever, as it

had four times appeared in Charleston, in South-Carolina.

"There is something very singular (says the doctor) in the constitution of the negroes, which renders them not liable to this fever; for though many of them were as much exposed as the nurses to the infection, yet I never knew of one instance of this fever among them, though they are equally subject with the white people to the bilious fever*."

A day or two after this publication the following letter from the mayor of the city, to Mr. Claypoole, the printer of the Mail, appeared in his paper.

"SIR,

"IT is with peculiar satisfaction that I communicate to the public, through your paper, that the AFRICAN SOCIETY, touched with the distresses which arise from the present dangerous disorder, have voluntarily undertaken to furnish nurses to attend the afflicted; and that, by applying to

* Essays and Observations, Physical and Literary, vol. xi. page 409.

ABSALOM JONES and WILLIAM GRAY, both members of that society, they may be supplied.

MATTH. CLARKSON,

September 6th, 1793. *Mayor.*

It was not long after these worthy Africans undertook the execution of their humane offer of services to the sick before I was convinced I had been mistaken. They took the disease in common with the white people, and many of them died with it. I think I observed the greatest number of them to sicken after the mornings and evenings became cool. A large number of them were my patients. The disease was lighter in them than in white people. I met with no case of hæmorrhage in a black patient.

The tobacconists and persons who used tobacco did not escape the disease. I observed snuff-takers to be more devoted to their boxes than usual, during the prevalence of the fever.

I have remarked, formerly, that servant maids suffered much by the disease. They were the only patients I lost in several large families. I ascribe their deaths to the following causes:

1*st*. To the great and unusual debility induced upon their systems by labour in attending their masters and mistresses, or their children. Debility, according to its degrees and duration, seems to have had the same effect upon the mortality of this fever that it has upon the mortality of an inflammation of the lungs. When it is moderate and of short duration it predisposes only to a common pneumony, but when it is violent and protracted, in its degrees and duration, it predisposes to a pulmonary consumption.

2*dly*. To their receiving large quantities of impure air into their bodies, and in a most concentrated state, by being obliged to perform the most menial offices for the sick, and by washing, as well as removing foul linen, and the like.

3*dly*. To their being left more alone in confined or distant rooms, and thereby suffering from depression of spirits, or the want of a punctual supply of food and medicines.

There did not appear to be any advantage from smelling vinegar, tar, camphor, or volatile salts, in preventing the disease. Bark and wine were equally ineffectual for that purpose. I was called to many hundred people who were infected after

using one or more of them. Nor did the white washing of walls secure families from the disease. I am disposed to believe garlic was the only substance that was in any degree useful in preventing it. I met with several persons who chewed it constantly, and who were much exposed to the miasmata, without being infected. All other substances seemed to do harm by begetting a false confidence in the mind, to the exclusion of more rational preservatives. I have suspected further, that such of them as were of a volatile nature helped to spread the disease by affording a vehicle for miasmata through the air.

There was great mortality in all those families who lived in wooden houses. Whether this arose from the small size of these houses, or from the want of cleanliness of the people who occupied them, or from the miasmata becoming more accumulated, by adhering to the wood, I am unable to determine. Perhaps it was the effect of the cooperation of all three of those causes.

I have said, formerly, that intemperance in drinking predisposed to the disease; but there were several instances of persons having escaped it who were constantly under the influence of strong drink. The stimulus of ardent spirits probably

predominated over the stimulus of the miasmata, and thus excited an artificial fever which defended the system from that which was epidemic.

I heard of some sea-faring people who lived on board their vessels who escaped the disease. The smell of the tar was supposed to have preserved them; but, from its being ineffectual in other cases, I am disposed to ascribe their escape to the infected air of the city being destroyed by a mixture with the water of the Delaware.

Many people who were infected in the city were attacked by the disease in the country, but they did not propagate it, even to persons who slept in the same room with them.

Dr. Lind informs us that many persons escaped the yellow fever which prevailed in Pensacola in the year 1765, by retiring to the ships which lay in the harbour, and that when the disease had been taken, the pure air of the water changed it into an intermitting fever*. The same changes have frequently been produced in malignant fevers, by sending patients infected with them from the foul air of a city, into the pure air of the country.

* Diseases of Warm Climates, p. 169.

Persons confined in the house of employment, in the hospital, and in the jail, escaped the fever. The airy and remote situation of those buildings was probably the chief means of their preservation. Perhaps they derived additional security from their simple diet, their exemption from hard labour, and from being constantly sheltered from heat and cold.

Several families, who shut up their front and back doors and windows, and avoided going out of their houses except to procure provisions, escaped the disease.

I have taken some pains to ascertain, whether any class of tradesmen escaped the fever, or whether there was any species of labour which protected from it. The result of my inquiries is as follows: Three butchers only, out of nearly one hundred who remained in the city, died with the disease. Many of them attended the markets every day. Two painters, who worked at their business during the whole time of the prevalence of the fever, and in exposed situations, escaped it. Out of forty scavengers who were employed in collecting and carrying away the dirt of the streets, only one was affected by the fever and died. Very few grave-diggers, compared with the number who

were employed in that business, were infected; and it is well known, that scarcely an instance was heard of persons taking the disease, who were constantly employed in digging cellars. The fact is not new that grave-diggers escape malignant fevers. It is taken notice of by Dr. Clark.

It was said by some physicians in the public papers, that the neighbourhood of the grave-yards was more infected than other parts of the city. The reverse of this assertion was true in several cases, owing probably to the miasmata being diluted and weakened by its mixture with the air of the grave-yards: for this air was pure, compared with that which stagnated in the streets.

It was said further, that the disease was propagated by the inhabitants assembling on Sundays for public worship; and, as a proof of this assertion, it was reported, that the deaths were more numerous on Sundays than on other days; occasioned by the infection received on one Sunday producing death on the succeeding first day of the week. The register of the deaths shows that this was not the case. I am disposed to believe that fewer people sickened on Sundays, than on any other day of the week; owing to the general rest from labour, which I have before said was one of

the exciting causes of the disease. From some facts to be mentioned presently, it will appear probable, that places of public worship, in consequence of their size, as well as of their being shut up during the greatest part of the week, were the freest from miasmata of any houses in the city. It is agreeable to discover in this, as well as in all other cases of public and private duty, that the means of health and moral happiness are in no one instance opposed to each other.

The disease, which was at first confined to Water-street, soon spread through the whole city. After the 15th of September, the atmosphere of every street in the city was charged with miasmata; and there were few citizens in apparent good health, who did not exhibit one or more of the following marks of their presence in their bodies.

1. A yellowness in the eyes, and a sallow colour upon their skin.

2. A preternatural quickness in the pulse. I found but two exceptions to this remark, out of a great number of persons whose pulses I examined. In one of them it discovered several preternatural intermissions in the course of a minute. This quickness of pulse occurred in the negroes, as

well as in the white people. I met with it in a woman who had had the yellow fever in 1762. In two women, and in one man above 70, the pulse beat upwards of 90 strokes in a minute. This preternatural state of the pulse during the prevalence of a pestilential fever, in persons in health, is taken notice of by Riverius*.

3. Frequent and copious discharges by the skin of yellow sweats. In some persons these sweats sometimes had an offensive smell, resembling that of the washings of a gun.

4. A scanty discharge of high coloured or turbid urine.

5. A deficiency of appetite, or a greater degree of it than was natural.

6. Costiveness.

7. Wakefulness.

8. Head-ach.

* "Pulsus sanorum pulsibus similes admodum, periculosi."—*De Febre Pestilenti, p.* 114.

9. A preternatural dilatation of the pupils. This was universal. I was much struck in observing the pupil in one of the eyes of a young man who called upon me for advice, to be of an oblong figure. Whether it was natural, or the effect of the miasmata acting on his brain, I could not determine.

It will be thought less strange that the miasmata should produce these changes in the systems of persons who resided constantly in the city, when I add, that many country people who spent but a few hours in the streets in the day, in attending the markets, were infected by the disease, and sickened and died after they returned home; and that others, whom business compelled to spend a day or two in the city during the prevalence of the fever, but who escaped an attack of it, declared that they were indisposed, during the whole time, with languor or head-ach.

I was led to observe and record the above effects of the miasmata upon persons in apparent good health, by a fact I met with in Dr. Mitchell's history of the yellow fever in Virginia, in the year 1741. In that fever, blood drawn from a vein was always dissolved. The same state of the blood was observed in many persons who had been ex-

posed to the miasmata, who discovered no other symptom of the disease.

A woman whom I had formerly cured of a mania, who lived in an infected neighbourhood, had a fresh attack of that disease, accompanied by an unusual menstrual flux. I ascribed both these complaints to the action of the miasmata upon her system.

The smell emitted from a patient, in a clean room, was like that of the small-pox, but in most cases of a less disagreeable nature. Putrid smells in sick rooms were the effects of the excretions, or of some other filthy matters. In small rooms, crowded in some instances with four or five sick people, there was an effluvia that produced giddiness, sickness at stomach, a weakness of the limbs, faintness, and in some cases a diarrhœa. I met with a fœtid breath in one patient, which was not the effect of that medicine which sometimes produces it.

The state of the atmosphere, during the whole month of September, and the first two weeks in October, favoured the accumulation of the miasmata in the city.

The register of the weather shows how little the air was agitated by winds during the above time. In vain were changes in the moon expected to alter the state of the air. The light of the morning mocked the hopes that were raised by a cloudy sky in the evening. The sun ceased to be viewed with pleasure. Hundreds sickened every day beneath the influence of his rays: and even where they did not excite the disease, they produced a languor in the body unknown to the oldest inhabitant of the city, at the same season of the year.

A meteor was seen at two o'clock in the morning, on or about the twelth of September. It fell between Third-street and the hospital, nearly in a line with Pine-street. Moschetoes (the usual attendants of a sickly autumn) were uncommonly numerous. Here and there a dead cat added to the impurity of the air of the streets. It was supposed those animals perished with hunger in the city, in consequence of so many houses being deserted by the inhabitants who had fled into the country, but the observations of subsequent years made it more probable they were destroyed by the same morbid state of the atmosphere which produced the reigning epidemic.

It appears further, from the register of the weather, that there was no rain between the 25th of August and the 15th of October, except a few drops, hardly enough to lay the dust of the streets, on the 9th of September, and the 12th of October. In consequence of this drought, the springs and wells failed in many parts of the country. The dust in some places extended two feet below the surface of the ground. The pastures were deficient, or burnt up. There was a scarcity of autumnal fruits in the neighbourhood of the city. But while vegetation drooped or died from the want of moisture in some places, it revived with preternatural vigour from unusual heat in others. Cherry-trees blossomed, and apple, pear, and plum-trees bore young fruit in several gardens in Trenton, thirty miles from Philadelphia, in the month of October.

However inoffensive uniform heat, when agitated by gentle breezes, may be, there is, I believe, no record of a dry, warm, and stagnating air, having existed for any length of time without producing diseases. Hippocrates, in describing a pestilential fever, says the year in which it prevailed was without a breeze of wind*. The same state of the at-

* "Sine aura, usque annus fuit."—*Epid.* 3.

mosphere, for six weeks, is mentioned in many of the histories of the plague which prevailed in London, in 1665*. Even the sea air itself becomes unwholesome by stagnating; hence Dr. Clark informs us, that sailors become sickly after long calms in East-India voyages†. Sir John Pringle delivers the following aphorism from a number of similar observations upon this subject: "When the heats come on soon, and continue throughout autumn, not moderated by winds or rains, the season proves sickly, distempers appear early, and are dangerous‡."

Who can review this account of the universal diffusion of the miasmata which produced this disease, its universal effects upon persons apparently in good health, and its accumulation and concentration, in consequence of the calmness of the air, and believe that it was possible for a febrile disease to exist at that time in our city that was not derived from that source?

The West-India writers upon the yellow fever have said that it is seldom taken twice, except by

* Letter from Sir John Bernard to Dr. Floyer, p. 233.

† Vol. i. p. 5.

‡ Diseases of the Army, p. 5. of the 7th London edition.

persons who have spent some years in Europe or America in the interval between its first and second attack. I directed my inquiries to this question, and I now proceed to mention the result of them. I met with five persons, during the prevalence of the disease, who had had it formerly, two of them in the year 1741, and three in 1762, who escaped it in 1793, although they were all more or less exposed to the infection. One of them felt a constant pain in her head while the disease was in her family. Four of them were aged, and of course less liable to be acted upon by the miasmata than persons in early or middle life. Mr. Thomas Shields furnished an unequivocal proof that the disease could be taken after an interval of many years. He had it in the year 1762, and narrowly escaped from a violent attack of it this year. Cases of reinfection were very common during the prevalence of this fever. They occurred most frequently where the first attack had been light. But they succeeded attacks that were severe in Dr. Griffitts, Dr. Mease, my pupil Mr. Coxe, and several others, whose cases came under my notice.

I have before remarked that the miasmata sometimes excited a fever as soon as they were taken into the body, but that they often lay there from one to sixteen days before they produced the dis-

ease. How long they existed in the body after a recovery from the fever I could not tell, for persons who recovered were, in most cases, exposed to their action from external sources. The preternatural dilatation of the pupils was a certain mark of the continuance of some portion of them in the system. In one person who was attacked with the fever on the night of the 9th of October, the pupils did not contract to their natural dimensions until the 7th of November.

Having described the effects of the miasmata upon the body, I proceed now to mention the changes induced upon it by death.

Let us first take a view of it as it appeared soon after death. Some new light may perhaps be thrown upon the proximate cause of the disease by this mode of examining the body.

My information upon this subject was derived from the attendants upon the sick, and from the two African citizens who were employed in burying the dead, viz. Richard Allen and Absalom Jones. The coincidence of the information I received from different persons satisfied me that all that I shall here relate is both accurate and just.

A deep yellow colour appeared in many cases within a few minutes after death. In some the skin became purple, and in others black. I heard of one case in which the body was yellow above, and black below its middle. In some the skin was as pale as it is in persons who die of common fevers. A placid countenance was observed in many, resembling that which occurs in an easy and healthful sleep.

Some were stiff within one hour after death. Others were not so for six hours afterwards. This sudden stiffness after death, Dr. Valli informs us, occurred in persons who died of the plague in Smyrna, in the year 1784*.

Some grew cold soon after death, while others retained a considerable degree of heat for six hours, more especially on their backs.

A stream of tears appeared on the cheeks of a young woman, which seemed to have flowed after her death.

Some putrified in a short time after their dissolution, but others had no smell for twelve, eigh-

* Experiments on Animal Electricity, p. 90.

teen, and twenty hours afterwards. This absence of smell occurred in those cases in which evacuations had been used without success in the treatment of the disease.

Many discharged large quantities of black matter from the bowels, and others blood from the nose, mouth, and bowels after death. The frequency of these discharges gave rise to the practice of pitching the joints of the coffins which were used to bury the dead.

The morbid appearances of the internal parts of the body, as they appear by dissection after death from the yellow fever, are different in different countries, and in the same countries in different years. I consider them all as effects only of a stimulus acting upon the whole system, and determined more or less by accidental circumstances to particular viscera. Perhaps the stimulus of the miasmata determines the fluids more violently in most cases to the liver, stomach, and bowels, and thereby disposes them more than other parts to inflammation and mortification, and to similar effusions and eruptions with those which take place on the skin. There can be no doubt of the miasmata acting upon the liver, and thereby altering the qualities of the bile. I transcribe, with great pleasure,

the following account of the state of the bile in a female slave of forty years of age, from Dr. Mitchell's History of the Yellow Fever, as it prevailed in Virginia, in the years 1737 and 1741, inasmuch as it was part of that clue which led me to adopt one of the remedies on which much of the success of my practice depended.

"The gall bladder (says the doctor) appeared outwardly of a deep yellow, but within was full of a black ropy coagulated atrabilis, which sort of substance obstructed the pori biliarii, and ductus choledochus. This atrabilis was hardly fluid, but upon opening the gall bladder, it retained its form and shape, without being evacuated, being of the consistence of a thin extract, and, within, glutinous and ropy, like soap when boiling. This black matter seemed so much unlike bile, that I doubted if there were any bile in the gall bladder. It more resembled bruised or mortified blood, evacuated from the mortified parts of the liver, surrounding it, although it would stain a knife or probe thrust into it of a yellow colour, which, with its ropy consistence, seemed more peculiar to a bilious humour."

The same appearance of the bile was discovered in several other subjects dissected by Dr. Mitchell.

The liver, in the above-mentioned slave, was turgid and plump on its outside, but on its concave surface, two thirds of it were of a deep black colour, and round the gall bladder it seemed to be mortified and corrupted.

The duodenum was lined on its inside, near the gall bladder, with a viscid ropy bile, like that which has been described. Its villous coat was lined with a thick fur or slime, which, when scraped or pealed off, the other vascular and muscular coats of the gut appeared red and inflamed.

The omentum was so much wasted, that nothing but its blood-vessels could be perceived.

The stomach was inflamed, both on its outside and inside. It contained a quantity of bile of the same consistence, but of a blacker colour than that which was found in the gall bladder. Its villous coat, like that of the duodenum, was covered with fuzzy and slimy matter. It moreover appeared to be distended or swelled. This peculiarity in the inner coat of the stomach was universal in all the bodies that were opened, of persons who died of this disease.

The lungs, instead of being collapsed, were inflated as in inspiration. They were all over full of black or livid spots. On these spots were to be seen small vesicles or blisters, like those of an erysipelas or gangrene, containing a yellow humour.

The blood-vessels in general seemed empty of blood, even the vena cava and its branches; but the vena portarum was full and distended as usual. The blood seemed *collected* in the *viscera;* for upon cutting the lungs or sound liver or spleen, they bled freely.

The brain was not opened in this body, but it was not affected in three others whose brains were examined.

Dr. Mackittrick, in his inaugural dissertation, published at Edinburgh in the year 1766, "De Febre Indiæ Occidentalis, Maligna Flava," or upon the yellow fever of the West-Indies, says, that in some of the patients who died of it, he found the liver sphacelated, the gall bladder full of black bile, and the veins turgid with black fluid blood. In others he found the liver no ways enlarged, and its "texture only vitiated." The stomach, the duodenum, and ilium, were remarkably inflamed

in all cases. The pericardium contained a viscid yellow serum, and in a larger quantity than common. The urinary bladder was a little inflamed. The lungs were sound.

Dr. Hume, in describing the yellow fever of Jamaica, informs us, that in several dead bodies which he opened, he found the liver enlarged and turgid with bile, and of a pale yellow colour. In some he found the stomach and duodenum inflamed. In one case he discovered black spots in the stomach, of the size of a crown piece. To this account he adds, "that he had seen some subjects opened, on whose stomachs *no marks of inflammation* could be discovered; and yet these had excessive vomiting."

Dr. Lind has furnished us with an account of the state of the body after death, in his short history of the yellow fever, which prevailed at Cadiz, in the year 1764. "The stomach (he says), mesentery, and intestines, were covered with gangrenous spots; there were ulcers on the orifice of the stomach, and the liver and lungs were of a putrid colour and texture*."

* Diseases of Warm Climates, p. 125.

To these accounts of the morbid appearances of the body after death from the yellow fever I shall only add the account of several dissections, which was given to the public in Mr. Brown's Gazette, during the prevalence of this epidemic, by Dr. Physick and Dr. Cathrall.

" Being well assured of the great importance of dissections of morbid bodies in the investigation of the nature of diseases, we have thought it of consequence that some of those dead of the present prevailing malignant fever should be examined; and, without enlarging on our observations, it appears at present sufficient to state the following facts.

" 1st. That the brain in all its parts has been found in a natural condition.

" 2d. That the viscera of the thorax are perfectly sound. The blood, however, in the heart and veins is fluid, similar, in its consistence, to the blood of persons who have been hanged, or destroyed by electricity.

" 3d. That the stomach, and beginning of the duodenum, are the parts that appear most diseased. In two persons who died of the disease on the 5th day, the villous membrane of the stomach, especi-

ally about its smaller end, was found highly inflamed; and this inflammation extended through the pylorus into the duodenum, some way. The inflammation here was exactly similar to that induced in the stomach by acrid poisons, as by arsenic, which we have once had an opportunity of seeing in a person destroyed by it.

" The bile in the gall-bladder was quite of its natural colour, though very viscid.

" In another person, who died on the 8th day of the disease, several spots of extravasation were discovered between the membranes, particularly about the smaller end of the stomach, the inflammation of which had considerably abated. Pus was seen in the beginning of the duodenum, and the villous membrane at this part was thickened.

" In two other persons, who died at a more advanced period of the disease, the stomach appeared spotted in many places with extravasations, and the inflammation disappeared. It contained, as did also the intestines, a black liquor, which had been vomited and purged before death. This black liquor appears clearly to be an altered secretion from the liver; for a fluid in all respects of the same qualities was found in the gall bladder. This li-

quor was so acrid, that it induced considerable inflammation and swelling on the operator's hands, which remained some days. The villous membrane of the intestines, in these last two bodies, was found inflamed in several places.

" The liver was of its natural appearance, excepting in one of the last persons, on the surface of which a very few distended veins were seen: all the other abdominal viscera were of a healthy appearance.

" The external surface of the stomach, as well as of the intestines, was quite free from inflammation; the veins being distended with blood, which appeared through the transparent peritonium, gave them a dark colour.

" The stomach of those who died early in the disease was always contracted; but in those who died at a more advanced period of it, where extravasations appeared, it was distended with air.

" P. S. PHYSICK,
" J. CATHRALL."

I have before remarked, that these dissections were made early in the disease, and that Dr. An-

nan attended a dissection of a body at Bush-hill, some time afterwards, in which an unusual turgescence appeared in the vessels of the brain.

Thus far have I delivered the history of the yellow fever, as it affected the human body with sickness and death. I shall now mention a few of those circumstances of public and private distress which attended it. I have before remarked, that the first reports of the existence of this fever were treated with neglect or contempt. A strange apathy pervaded all classes of people. While I bore my share of reproach for "terrifying our citizens with imaginary danger," I answered it by lamenting "that they were not terrified enough." The publication from the college of physicians soon dissipated this indifference and incredulity. Fear or terror now sat upon every countenance. The disease appeared in many parts of the town, remote from the spot where it originated; although, for a while, in every instance, it was easily traced to it. This set the city in motion. The streets and roads leading from the city were crowded with families flying in every direction for safety to the country. Business began to languish. Water-street, between Market and Race-streets, became a desart. The poor were the first victims of the fever. From the sudden interruption of business they suf-

fered for a while from poverty as well as from disease. A large and airy house at Bush-hill, about a mile from the city, was opened for their reception. This house, after it became the charge of a committee appointed by the citizens on the 14th of September, was regulated and governed with the order and cleanliness of an old and established hospital. An American and French physician had the exclusive medical care of it after the 22d of September.

The disease, after the second week in September, spared no rank of citizens. Whole families were confined by it. There was a deficiency of nurses for the sick, and many of those who were employed were unqualified for their business. There was likewise a great deficiency of physicians, from the desertion of some, and the sickness and death of others. At one time there were but three physicians who were able to do business out of their houses, and at this time there were probably not less than 6000 persons ill with the fever.

During the first three or four weeks of the prevalence of the disease I seldom went into a house the first time, without meeting the parents or children of the sick in tears. Many wept aloud in my entry, or parlour, who came to ask for advice for

their relations. Grief after a while descended below weeping, and I was much struck in observing that many persons submitted to the loss of relations and friends without shedding a tear, or manifesting any other of the common signs of grief.

A cheerful countenance was scarcely to be seen in the city for six weeks. I recollect once, in entering the house of a poor man, to have met a child of two years old that smiled in my face. I was strangely affected with this sight (so discordant to my feelings and the state of the city) before I recollected the age and ignorance of the child. I was confined the next day by an attack of the fever, and was sorry to hear, upon my recovery, that the father and mother of this little creature died a few days after my last visit to them.

The streets every where discovered marks of the distress that pervaded the city. More than one half the houses were shut up, although not more than one third of the inhabitants had fled into the country. In walking for many hundred yards, few persons were met, except such as were in quest of a physician, a nurse, a bleeder, or the men who buried the dead. The hearse alone kept up the remembrance of the noise of carriages or carts in the streets. Funeral processions were laid aside.

A black man, leading or driving a horse, with a corpse on a pair of chair wheels, with now and then half a dozen relations or friends following at a distance from it, met the eye in most of the streets of the city, at every hour of the day, while the noise of the same wheels passing slowly over the pavements, kept alive anguish and fear in the sick and well, every hour of the night*.

But a more serious source of the distress of the city arose from the dissentions of the physicians,

* In the Life of Thomas Story, a celebrated preacher among the friends, there is an account of the distress of the city, in its infant state, from the prevalence of the yellow fever, in the autumn of 1699, nearly like that which has been described. I shall insert the account in his own words. "Great was the fear that fell on all flesh. I saw no lofty or airy countenance, nor heard any vain jesting to move men to laughter. Every face gathered paleness, and many hearts were humbled, and countenances fallen and sunk, as such that waited every moment to be summoned to the bar, and numbered to the grave." The same author adds, that six, seven, and sometimes eight, died of this fever in a day, for several weeks, His fellow-traveller, and companion in the ministry, Roger Gill, discovered upon this occasion an extraordinary degree of christian philanthropy. He publicly offered himself, in one of the meetings of the society, as a sacrifice for the people, and prayed that "God would please to accept of his life for them, that a stop might be put to the contagion." He died of the fever a few days afterwards.

about the nature and treatment of the fever. It was considered by some as a modification of the influenza, and by others as the jail fever. Its various grades and symptoms were considered as so many different diseases, all originating from different causes. There was the same contrariety in the practice of the physicians that there was in their principles. The newspapers conveyed accounts of both to the public, every day. The minds of the citizens were distracted by them, and hundreds suffered and died from the delays which were produced by an erroneous opinion of a plurality of diseases in the city, or by indecision in the choice, or a want of confidence in the remedies of their physician.

The science of medicine is related to every thing, and the philosopher as well as the christian will be gratified by knowing the effects of a great and mortal epidemic upon the morals of a people. It was some alleviation of the distress produced by it, to observe its influence upon the obligations of morality and religion. It was remarked during this time, by many people, that the name of the Supreme Being was seldom profaned, either in the streets, or in the intercourse of the citizens with each other. But two robberies, and those of a trifling nature, occurred in nearly two months, al-

though many hundred houses were exposed to plunder, every hour of the day and night. Many of the religious societies met two or three times a week, and some of them every evening, to implore the interposition of Heaven to save the city from desolation. Humanity and charity kept pace with devotion. The public have already seen accounts of their benevolent exercises in other publications. It was my lot to witness the uncommon activity of those virtues upon a smaller scale. I saw little to blame, but much to admire and praise in persons of different professions, both sexes, and of all colours. It would be foreign to the design of this work to draw from the obscurity which they sought, the many acts of humanity and charity, of fortitude, patience, and perseverance, which came under my notice. They will be made public and applauded elsewhere.

But the virtues which were excited by our calamity were not confined to the city of Philadelphia. The United States wept for the distresses of their capital. In several of the states, and in many cities and villages, days of humiliation and prayer were set apart to supplicate the Father of Mercies in behalf of our afflicted city. Nor was this all. From nearly every state in the union the most liberal contributions of money, provisions,

and fuel were poured in for the relief and support of such as had been reduced to want by the suspension of business, as well as by sickness and the death of friends.

The number of deaths between the 1st of August and the 9th of November amounted to four thousand and forty-four. I shall here insert a register of the number which occurred on each day, beginning on the 1st of August, and ending on the 9th of November. By comparing it with the register of the weather it will show the influence of the latter on the disease. Several of the deaths in August were from other acute diseases, and a few in the succeeding months were from such as were of a chronic nature.

		died.			died.
August	1	9	Brought forward		77
	2	8	August	10	6
	3	9		11	7
	4	10		12	5
	5	10		13	11
	6	3		14	4
	7	12		15	9
	8	5		16	7
	9	11		17	6
		77			132

		died.
Brought forward		132
	18	5
	19	9
	20	7
	21	8
	22	13
	23	10
	24	17
	25	12
	26	17
	27	12
	28	22
	29	24
	30	20
	31	17
September	1	17
	2	18
	3	11
	4	23
	5	20
	6	24
	7	18
	8	42
	9	32
	10	29
	11	23
	12	33
	13	37
	14	48
	15	56
	16	67
		823

		died.
Brought forward		823
September	17	81
	18	68
	19	61
	20	67
	21	57
	22	76
	23	68
	24	96
	25	87
	26	52
	27	60
	28	51
	29	57
	30	63
October	1	74
	2	66
	3	78
	4	58
	5	71
	6	76
	7	82
	8	90
	9	102
	10	93
	11	119
	12	111
	13	104
	14	81
	15	80
	16	70
		3122

		died.
Brought forward		3122
October	17	80
	18	59
	19	65
	20	55
	21	59
	22	82
	23	54
	24	38
	25	35
	26	23
	27	13
	28	24
		3709

		died.
Brought forward		3709
October	29	17
	30	16
	31	21
November	1	13
	2	21
	3	15
	4	15
	5	14
	6	11
	7	15
	8	8
	9	6
Total*		3881

From this table it appears that the principal mortality was in the second week of October. A general expectation had obtained, that cold weather was as fatal to this fever as heavy rains. The usual time for its arrival had come, but the weather was still not only moderate, but warm. In this awful situation, the stoutest hearts began to fail. Hope sickened, and despair succeeded distress in almost every countenance. On the *fifteenth* of October, it pleased God to alter the state of the air.

* In the above accounts there is a deficiency of returns from several grave-yards of 163.

The clouds at last dropped health in showers of rain, which continued during the whole day, and which were succeeded for several nights afterwards by cold and frost. The effects of this change in the weather appeared first in the sudden diminution of the sick, for the deaths continued for a week afterwards to be numerous, but they were of persons who had been confined before, or on the day in which the change had taken place in the weather.

The appearance of this rain was like a dove with an olive branch in its mouth to the whole city. Public notice was given of its beneficial effects, in a letter subscribed by the mayor of Philadelphia, who acted as president of the committee, to the mayor of New-York. I shall insert the whole of this letter. It contains, besides the above information, a record of the liberality of that city to the distressed inhabitants of Philadelphia.

" Sir,

" I am favoured with your letter of the 12th instant, which I have communicated to the committee for the relief of the poor and afflicted of this city.

" It is with peculiar satisfaction that I execute their request, by making, in their name, on behalf of our suffering fellow-citizens, the most grateful acknowledgements for the seasonable benevolence of the common council of the city of New-York. Their sympathy is balm to our wounds.

" We acknowledge the Divine interposition, whereby the hearts of so many around us have been touched with our distress, and have united in our relief.

" May the Almighty Disposer of all events be graciously pleased to protect your citizens from the dreadful calamity with which we are now visited; whilst we humbly kiss the rod, and improve by the dispensation.

" The part, sir, which you personally take in our afflictions, and which you have so pathetically expressed in your letter, excites in the breasts of the committee the warmest sensations of fraternal affection.

" The refreshing rain which fell the day before yesterday, though light, and the cool weather which hath succeeded, appear to have given a check to the prevalence of the disorder: of this we have

satisfactory proofs, as well in the decrease of the funerals, as in the applications for removal to the hospital.

" I have, at your request, this day drawn upon you, at sight, in favour of the president and directors of the Bank of North America, for the sum of five thousand dollars, the benevolent donations of the common council of the city of New-York.

" With sentiments of the greatest esteem and regard,

" I am, sir,

" Your most obedient humble servant,

" MATTH. CLARKSON.

" *Philadelphia, Oct.* 17, 1793.

" *Richard Varick, mayor*
of the city of New-York."

It is no new thing for bilious fevers, of every description, to be checked or subdued by *wet* and *cold* weather.

The yellow fever which raged in Philadelphia in 1699, and which is taken notice of by Thomas Story in his journal, ceased about the latter end of October, or the beginning of November. Of this there are satisfactory proofs, in the register of the interments in the friends' burying-ground, and in a letter, dated November 9th, old style, 1699, from Isaac Norris to one of his correspondents, which his grandson, Mr. Joseph P. Norris, politely put into my hands, with several others, which mention the disease, and all written in that memorable year in Philadelphia. The letter says, "It has pleased God to put a stop to our sore visitation, and town and country are now generally healthy." The same disease was checked by wet and cold weather in the year 1741. Of this there is a proof in a letter from Dr. Franklin to one of his brothers, who stopped at Burlington, on his way from Boston to Philadelphia, on account of the fever, until he was assured by the doctor, that a thunder gust, which had cooled the air, had rendered it safe for him to come into the city*. Mr. Lynford Lard-

* From a short note in the register of the interments in the friends' burying-ground, it appears that the fever this year made its first appearance in the month of June. The following is a copy of that note: "12th of the 6th month (O. S.), 1741, a malignant yellow fever now spreads much." Besides that note, there is the following: "25th of the 7th

ner, in a letter to one of his English friends, dated September 24, 1747, old style, after mentioning the prevalence of the fever in the city, says, " the weather is now much cooler, and those under the disorder revive. The symptoms are less violent, and the fever gradually abates."

I have in vain attempted to procure an account of the time of the commencement of cold weather in the autumn of 1762. In the short history of the fever of that year, which I have inserted from my note book, I have said that it continued to prevail in the months of November and December. The register of the interments in the friends' burying-ground in those months confirms that account. They were nearly as numerous in November and December as in September and October, viz. in September 22, in October 27, in November 19, and in December 26.

The bilious remitting fever of 1780 yielded to cool weather, accompanied by rain and an easterly wind*.

month (O. S.), 1741, many who died of the above distemper were persons lively, and strong, and in the prime of their time."

* Vol. I.

Sir John Pringle will furnish ample satisfaction to such of my readers as wish for more proofs of the efficacy of heavy rains, and cold weather, in checking the progress and violence of autumnal remitting fevers*.

From the 15th of October the disease not only declined, but assumed more obvious inflammatory symptoms. It was, as in the beginning, more necessarily fatal where left to itself, but it yielded more certainly to art than it did a few weeks before. The duration of it was now more tedious than in the warmer weather.

There were a few cases of yellow fever in November and December, after the citizens who had retired to the country returned to the city.

I heard of but three persons who returned to the city being infected with the disease; so completely was its cause destroyed in the course of a few weeks.

In consequence of a proclamation by the governor, and a recommendation by the clergy of Philadelphia, the 12th of December was observed as

* P. 5, 56, 180, and 323.

a day of thanksgiving throughout the state, for the extinction of the disease in the city.

It was easy to distinguish, in walking the streets, the persons who had returned from the country to the city, from those who had remained in it during the prevalence of the fever. The former appeared ruddy and healthy, while the latter appeared of a pale or sallow colour.

It afforded a subject of equal surprise and joy to behold the suddenness with which the city recovered its former habits of business. In the course of six weeks after the disease had ceased, nothing but fresh graves, and the black dresses of many of the citizens, afforded a public trace of the distress which had so lately prevailed in the city.

The month of November, and all the winter months which followed the autumnal epidemic, were in general healthy. A catarrh affected a number of people in November. I suspected it to be the influenza which had revived from a dormant state, and which had not spent itself, when it yielded to the predominance of the yellow fever. This opinion derives some support from a curious fact related by the late Mr. Hunter of the revival of the small-pox in a patient, in whom it had

been suspended for some time by the measles*. The few fevers which prevailed in the winter were highly inflammatory. The small-pox in the natural way was in several instances confluent; and in one or two fatal. I was prepared to expect this inflammatory diathesis in the fevers of the winter; for I had been taught by Dr. Sydenham, that the diseases which follow a great and mortal epidemic partake more or less of its general character. But the diseases of the winter had a peculiarity still more extraordinary; and that was, many of them had several of the symptoms of the yellow fever, particularly a puking of bile, dark-coloured stools, and a yellow eye. Mr. Samuel D. Alexander, a student of medicine from South-Carolina, who was seized with a pneumony about Christmas, had, with a yellow eye, a dilated pupil and a hard pulse, which beat only fifty strokes in a minute. His blood was such as I had frequently observed in the yellow fever. Dr. Griffitts informed me that he attended a patient on the 9th of January, in a pneumony, who had a universal yellowness on his skin. I met with a case of pneumony on the 20th of the same month, in which I observed the same degrees of redness in the eyes that were common in the yellow fever. My pupil, Mr. Coxe, lost

* Introduction to a Treatise on the Venereal Disease, p. 3. of the American edition.

blood in an inflammatory fever, on the 18th of February, which was dissolved. Mr. Innes, the brewer, had a deep yellow colour in his eyes, on the fourth day of a pneumony, on the 27th of the same month; and Mr. Magnus Miller had the same symptom of a similar disease on the 16th of March. None of these bilious and anomalous symptoms of the inflammatory fevers of the winter and spring suprised me. I had been early taught, by Dr. Sydenham, that the epidemics of autumn often insinuate some of their symptoms into the winter diseases which follow them. Dr. Cleghorn informs us, that "the pleurisies which succeeded the autumnal tertians in Minorca, were accompanied by a vomiting and purging of green or yellow bilious matters*."

It belongs to powerful epidemics to be followed by similar diseases after they disappear, as well as to run into others at their first appearance. In the former case it is occasioned by a peculiar state of the body, created by the epidemic constitution of the air, not having been changed by the weather which succeeded it.

* Page 273.

The weather in March resembled that of May; while the weather in April resembled that of March in common years. A rash prevailed in many families, in April, accompanied in a few cases by a sore throat. It was attended with an itching, a redness of the eyes, and a slight fever in a few instances. The small-pox by inoculation in this month was more mortal than in former years. However unimportant these facts may appear at this time, future observations may perhaps connect them with a similar constitution of the air which produced the previous autumnal epidemic.

The appearance of bilious symptoms in the diseases of the winter, excited apprehensions in several instances of the revival of the yellow fever. The alarms, though false, served to produce vigilance and industry in the corporation, in airing and purifying such houses and articles of furniture as belonged to the poor; and which had been neglected in the autumn, after the ceasing of the disease.

The modes of purifying houses, beds, and clothes were various. Fumigations of nitre and aromatic substances were used by some people. Burying infected articles of furniture under ground, and baking them in ovens, were used by others.

Some destroyed all their beds and clothing that had been infected, or threw them into the Delaware. Many white-washed their walls, and painted the wood-work of their house. I did not conceive the seeds of the disease required all, or any of those means to destroy it. I believed *cold* and *water* to be sufficient for that purpose. I therefore advised keeping the windows of infected rooms open night and day, for a few days; to have the floors and walls of houses well washed; and to expose beds and such articles of household furniture as might be injured by washing, upon the bare earth for a week or two, taking care to turn them every day. I used no other methods of destroying the accumulated miasmata in my house and furniture, and experience showed that they were sufficient.

It is possible a portion of the excretions of the sick may be retained in clothes or beds, so as to afford an exhalation that may in the course of a succeeding summer and autumn, or from accidental warmth at any time, create a solitary case of fever, but it cannot render it epidemic. A trunk full of clothes, the property of Mr. James Bingham, who died of the yellow fever in one of the West-India islands about 50 years ago, was opened, some months after they were received by his friends, by

a young man who lived in his brother's family. This young man took the disease, and died; but without infecting any of the family; nor did the disease spread afterwards in the city. The father of Mr. Joseph Paschall was infected with the yellow fever of 1741, by the smell of a foul bed in passing through Norris's Alley, in the latter end of December, after the disease had left the city. He died on the 25th of the month, but without reviving the fever in the city, or even infecting his family.

The matter which produced the fever in both these cases, had nothing specific in it. It acted in the same manner that the exhalation from any other putrid matters would have done in a highly concentrated state.

In a letter from Dr. Senter of Newport, dated January 7th, 1794, I find the following fact, which I shall communicate in his own words. It is introduced to support the principle, that the yellow fever does not spread by contagion. "This place (says the doctor) has traded formerly very much to the West-India islands, and more or less of our people have died there every season, when the disease prevails in those parts. Clothes of these unfortunate people have been repeatedly brought home

to their friends, without any accident happening to them."

I feel with my reader the fatigue of this long detail of facts, and equal impatience with him to proceed to the history of the treatment of the fever; but I must beg leave to detain him a little longer from that part of the work, while I resume the subject of the origin of the fever. It is an interesting question, as it involves in it the means of preventing the return of the disease, and thereby of saving the lives of thousands of our citizens.

Soon after the fever left the city, the governor of the state addressed a letter to the college of physicians, requesting to know their opinion of its origin; if imported, from what *place*, at what *time*, and in what *manner*. The design of this inquiry was to procure such information as was proper to lay before the legislature, in order to improve the laws for preventing the importation or generation of infectious diseases, or to enact new ones, if necessary for that purpose. To the governor's letter the college of physicians sent the following answer:

"SIR,

"IT has not been from a want of respect to yourself, nor from inattention to the subject, that your letter of the 30th ult. was not sooner answered; but the importance of the questions proposed has made it necessary for us to devote a considerable portion of time and attention to the subject, in order to arrive at a safe and just conclusion.

"No instance has ever occurred of the disease called the *yellow fever* having been generated in this city, or in any other parts of the United States, as far as we know; but there have been frequent instances of its having been imported, not only into this, but into other parts of North-America, and prevailing there for a certain period of time; and from the rise, progress, and nature of the malignant fever, which began to prevail here about the beginning of last August, and extended itself gradually over a great part of the city, we are of opinion that this disease was imported into Philadelphia, by some of the vessels which arrived in the port after the middle of July. This opinion we

are further confirmed in by various accounts we have received from unquestionable authorities.

" Signed, by order of the college of physicians,

"JOHN REDMAN, *President.*

" *November* 26*th*, 1793.

" *To the governor of Pennsylvania.*"

Dr. Redman, the president of the college, Dr. Foulke, and Dr. Leib, dissented from the report contained in this letter. I have been necessarily led to continue it in the present edition of this work, not only because all the other members of that body still retain their belief of the importation of the fever, but as a reason for republishing the facts and arguments in support of its domestic origin.

I have asserted, in the introduction to the history of this fever, that I believed it to have been generated in our city; I shall now deliver my reasons for that belief.

1. The yellow fever in the West-Indies, and in all other countries where it is endemic, is the off-

spring of vegetable putrefaction. Heat, exercise, and intemperance in drinking (says Dr. Lind) *dispose* to this fever in hot climates, but they do not produce it without the concurrence of a remote cause. This remote cause exists at all times, in some spots of the islands, but in other parts even of the same islands, where there are no marsh exhalations, the disease is unknown. I shall not waste a moment in inquiring into the truth of Dr. Warren's account of the origin of this fever. It is fully refuted by Dr. Hillary, and it is treated as chimerical by Dr. Lind. They have very limited ideas of the history of this fever who suppose it to be peculiar to the East or West-Indies. It was admitted to have been generated in Cadiz after a hot and dry summer in 1764, and in Pensacola in 1765*. The tertian fever of Minorca, when it attacked Englishmen, put on the usual symptoms of the yellow fever†. In short, this disease appears, according to Dr. Lind, in all the southern parts of Europe, after hot and dry weather‡.

2. The same causes (under like circumstances) must always produce the same effects. There is

* Lind on the Diseases of Hot climates, p. 36 and 124.

† Cleghorn, p. 176.

‡ Diseases of Hot Climates, p. 123.

nothing in the air of the West-Indies, above other hot countries, which disposes it to produce a yellow fever. Similar degrees of heat, acting upon dead and moist vegetable matters, are capable of producing it, together with all its various modifications, in every part of the world. In support of this opinion, I shall transcribe part of a letter from Dr. Miller, formerly of the Delaware state, and now of New-York.

" *Dover, Nov.* 5, 1793.

" DEAR SIR,

" SINCE the middle of last July we have had a bilious colic epidemic in this neighbourhood, which exhibits phænomena very singular in this climate; and, so far as I am informed, unprecedented in the medical records, or popular traditions of this country. To avoid unnecessary details it will suffice at present to observe, that the disease, on this occasion, has assumed, not only all the essential characters, but likewise all the violence, obstinacy, and malignity described by the East and West-Indian practitioners. If any difference can be observed it seems here to manifest higher degrees of stubbornness and malignity than we usually meet in the histories of tropical writers. In the course of the disease, not only extreme con-

stipation, frequent vomiting, and the most excruciating pains of the bowels and limbs, harass the unhappy patient; but to these succeed paralysis, convulsions, &c. and almost always uncommon muscular debility, oppression of the præcordia, &c. are the consequence of a severe attack. Bile discharged in enormous quantities constantly assumes the most corrupted and acrimonious appearances, commonly æruginous in a very high degree, and sometimes quite atrabilious.

"The inference I mean to draw from the phænomena of this disease, as it appears in this neighbourhood, and which I presume will also apply to your epidemic, is *this*, that from the uncommon protraction and intenseness of our summer and autumnal heats, but principally from the unusual drought, we have had, since the middle of July, a near approach to a *tropical* season, and that of consequence we ought not to be surprised if tropical diseases, even of the most malignant nature, are *engendered* amongst us."

To the above information it may be added, that the dysentery which prevailed during the autumn of 1793, in several of the villages of Pennsylvania, was attended with a malignity and mortality unknown before in any part of the state. I need not

pause to remark that this dysentery arose from putrid exhalation, and that it is, like the bilious colic, only a modification of bilious fever.

But further, a malignant fever, resembling that which was epidemic in our city, prevailed during the autumn in many parts of the United States, viz. at Lynn in Massachusetts, at Weatherfield and Coventry in Connecticut, at New-Galloway in the state of New-York, on Walkill and on Pensocken creeks in New-Jersey, at Harrisburgh and Hummelstown in Pennsylvania, in Caroline county in Maryland, on the south branch of the Potowmac in Hardie county, also in Lynchburgh and in Alexandria in Virginia, and in several counties in North-Carolina. In none of these places was there a suspicion of the disease being imported from abroad, or conveyed by an intercourse with the city of Philadelphia.

It is no objection to the inference which follows from these facts, that the common remitting fever was not known during the above period in the neighbourhood of this city, and in many other parts of the state, where it had usually appeared in the autumnal months. There is a certain combination of moisture with heat, which is essential to the production of the remote cause of a bilious fever.

Where the heat is so intense, or of such long duration, as wholly to dissipate moisture, or when the rains are so great as totally to overflow the marshy ground, or to wash away putrid masses of matter, no fever can be produced.

Dr. Dazilles, in his treatise upon the diseases of the negroes in the West-Indies, informs us, that the *rainy* season is the most healthy at Cayenne, owing to the neighbouring morasses being *deeply* overflowed; whereas, at St. Domingo, a *dry* season is most productive of diseases, owing to its favouring those degrees of moisture which produce morbid exhalations. These facts will explain the reason why, in certain seasons, places which are naturally healthy in our country become sickly, while those places which are naturally sickly escape the prevailing epidemic. Previously to the dissipation of the moisture from the putrid masses of vegetable matters in our streets, and in the neighbourhood of the city, there were (as several practioners can testify) many cases of mild remittents, but they all disappeared about the first week in September.

It is worthy of notice, that the yellow fever prevailed in Virginia in the year 1741, and in Charleston, in South-Carolina, in the year 1699, in both

which years it prevailed in Philadelphia. Its prevalence in Charleston is taken notice of in a letter, dated November 18th, O. S. 1699, from Isaac Norris to one of his correspondents. The letter says, that " 150 persons had died in Charleston in a few days," that " the survivors fled into the country," and that " the town was thinned to a very few people." Is it not probable, from the prevalence of this fever twice in two places in the same years, that it was produced (as in 1793) by a general constitution of air, co-operating with miasmata, which favoured its generation in different parts of the continent? But again, such was the state of the air in the summer of 1793, that it predisposed other animals to diseases, besides the human species. In some parts of New-Jersey, a disease prevailed with great mortality among the horses, and in Virginia among the cows, during the autumn. The urine in both was yellow.—Large abscesses appeared in different parts of the body in the latter animals, which, when opened, discharged a yellow serous fluid. From the colour of these discharges, and of the urine, the disease got the name of the *yellow water*.

3. I have before remarked, that a quantity of damaged coffee was exposed at a time (July the 24th) and in a situation (on a wharf and in a dock)

which favoured its putrefaction and exhalation. Its smell was highly putrid and offensive, insomuch that the inhabitants of the houses in Water and Front-streets, who were near it, were obliged, in the hottest weather, to exclude it by shutting their doors and windows. Even persons, who only walked along those streets, complained of an intolerable fœtor, which, upon inquiring, was constantly traced to the putrid coffee. It should not surprise us, that this seed, so inoffensive in its natural state, should produce, after its putrefaction, a violent fever. The records of medicine (to be mentioned hereafter) furnish instances of similar fevers being produced, by the putrefaction of many other vegetable substances.

4. The rapid progress of the fever from Water-street, and the courses through which it travelled into other parts of the city, afford a strong evidence that it was at first propagated by exhalation from the putrid coffee. It was observed that it passed first through those alleys and streets which were in the course of the winds that blew across the dock and wharf, where the coffee had been thrown in a state of putrefaction.

5. Many persons who had worked, or even visited, in the neighbourhood of the exhalation from

the coffee, early in the month of August, were indisposed afterwards with sickness, puking, and yellow sweats, long before the air of Water-street was so much impregnated with the exhalation, as to produce such effects; and several patients, whom I attended in the yellow fever, declared to me, or to their friends, that their indipositions began exactly at the time they inhaled the offensive effluvia of the coffee.

6. The first cases of the yellow fever have been clearly traced to the sailors of the vessel who were first exposed to the effluvia of the coffee. Their sickness commenced with the day on which the coffee began to emit its putrid smell. The disease spread with the increase of the poisonous exhalation. A journeyman of Mr. Peter Brown's, who worked near the corner of Race and Water-streets, caught the disease on the 27th of July. Elizabeth Hill, the wife of a fisherman, was infected by only sailing near the pestilential wharf, about the 1st of August, and died at Kensington on the 14th of the same month. Many other names might be mentioned of persons who sickened during the last week in July or the first week in August, who ascribed their illnesses to the smell of the coffee.

7. It has been remarked that this fever did not spread in the country, when carried there by persons who were infected, and who afterwards died with it. During four times in which it prevailed in Charleston, in no one instance, according to Dr. Lining, was it propagated in any other part of the state.

8. In the histories of the disease which have been preserved in this country, it has *six* times appeared about the first or middle of August, and declined or ceased about the middle of October: viz. in 1732, 1739, 1745, and 1748 in Charleston, in 1791 in New-York, and in 1793 in Philadelphia. This frequent occurrence of the yellow fever at the usual period of our common bilious remittents, cannot be ascribed to accidental coincidence, but must be resolved, in most cases, into the combination of more active miasmata with the predisposition of a tropical season. In speaking of a tropical season, I include that kind of weather in which rains and heats are alternated with each other, as well as that which is uniformly warm.

9. Several circumstances attended this epidemic, which do not occur in the West-India yellow fever. It affected children as well as adults, in common with our annual bilious fevers. In the West-In-

dies, Dr. Hume tells us, it never attacked any person under puberty. It had, moreover, many peculiar symptoms (as I have already shown) which are not to be met with in any of the histories of the West-India yellow fever.

10. Why should it surprise us to see a yellow fever generated amongst us? It is only a higher grade of a fever which prevails every year in our city, from vegetable putrefaction. It conforms, in the difference of its degrees of violence and danger, to season as well as climate, and in this respect it is upon a footing with the small-pox, the measles, the sore-throat, and several other diseases. There are few years pass, in which a plethoric habit, and more active but limited miasmata, do not produce sporadic cases of true yellow fever in Philadelphia. It is very common in South and North-Carolina and in Virginia, and there are facts which prove, that not only strangers, but native individuals, and, in one instance, a whole family, have been carried off by it in the state of Maryland. It proved fatal to one hundred persons in the city of New-York in the year of 1791, where it was evidently generated by putrid exhalation. The yellow colour of the skin has unfortunately too often been considered as the characteristic mark of this fever, otherwise many other instances of its prevalence might be

discovered, I have no doubt, in every part of the United States. I wish, with Dr. Mosely, the term *yellow* could be abolished from the titles of this fever, for this colour is not only frequently absent, but sometimes occurs in the mildest bilious remittents. Dr. Haller, in his pathology, describes an epidemic of this kind in Switzerland, in which this colour generally attended, and I have once seen it almost universal in a common bilious fever, which prevailed in the American army, in the year 1776.

I cannot help taking notice, in this place, of an omission in the answer to the governor's letter, by the college of physicians. The governor requested to know whether it was imported; if it were, from *what place*, at *what time*, and in *what manner*. In the answer of the college of physicians to the governor's letter no notice was taken of any of those questions. In vain did Dr. Foulke call upon the college to be more definite in their answer to them. They had faithfully sought for the information required, but to no purpose. The character of their departed brother, Dr. Hutchinson, for capacity and vigilance in his office, as inspector of sickly vessels, was urged without effect as an argument against the probability of the disease being imported. Public report had derived it from several different islands; had chased it from ship to ship, and

from shore to shore; and finally conveyed it at different times into the city, alternately by dead and living bodies; and from these tales, all of which, when investigated, were proved to be without foundation, the college of physicians composed their letter. It would seem, from this conduct of the college, as if medical superstition had changed its names, and that, in accounting for the origin of pestilential fevers, celestial, planetary, and demoniacal influence had only yielded to the term *importation*.

Let not the reader reject the opinion I have delivered because it is opposed by so great a majority of the physicians of Philadelphia. A single physician supported an opinion of the existence of the plague at Messina, in the year 1743, in opposition to all the physicians (33 in number) of that city. They denied the disease in question to exist, because it was not accompanied by glandular swellings. Time showed that they were all mistaken, and the plague, which might probably have been checked, at its first appearance, by their united efforts, was, by means of their ignorance, introduced with great mortality into every part of the city. This disposition of physicians to limit the symptoms of several other diseases, cannot be sufficiently lamented. The frequent absence of a yellow

colour, in this epidemic, led to mistakes which cost the city of Philadelphia several hundred lives.

The letter of the college of physicians has served to confirm me in an opinion, that the plagues which occasionally desolated most of the countries of Europe, in former centuries, and which were always said to be of foreign extraction, were of domestic origin. Between the years 1006 and 1680, the plague was epidemic fifty-two times all over Europe. It prevailed fourteen times in the 14th century. The state of Europe, in this long period, is well known. Idleness, a deficiency of vegetable aliment, a camp life, from the frequency of wars, famine, an uncultivated and marshy soil, small cabins, and the want of cleanliness in dress, diet, and furniture, all concurred to generate pestilential diseases. The plagues which prevailed in London, every year from 1593 to 1611, and from 1636 to 1649, I believe were generated in that city. The diminution of plagues in Europe, more especially in London, appears to have been produced by the great change in the diet and manners of the people; also by the more commodious and airy forms of the houses of the poor, among whom the plague *always* makes its first appearance. It is true, these plagues were said by authors to have been imported, either directly or indirectly, from the Le-

vant; but the proofs of such importation were as vague and deficient as they were of the West-India origin of our epidemic. The pestilential fevers which have been mentioned, have been described by authors by the generic name of the plague, but they appear to have originated from putrid vegetable exhalations, and to have resembled, in most of their symptoms, the West-India and *North-American* yellow fever.

I shall resume this interesting subject in another place, in which I shall mention a number of additional facts, not only in support of the domestic origin of the bilious yellow fever, but of its not spreading by contagion, and of course of its being impossible to import it. I shall at the same time enumerate all its different sources, and point out the means of destroying or removing them, and thus of exterminating the disease from our country.

With these observations I conclude the history of the epidemic fever of the year 1793. A few of its symptoms, which have been omitted in this history, will be included in the method of cure, for they were discovered or produced by the remedies which were given for that purpose.

☞ The following page begins an account of the states of the thermometer and weather, from the 1st of January to the 1st of August, and of the states of the barometer, thermometer, winds, and weather, from the 1st of August to the 9th of November, 1793. The times of observation, for the first three months are at 7 in the morning, and 2 in the afternoon; for the next five months they are at 6 in the morning, and 3 in the afternoon. From the 1st of October to the 9th of November, they are as in the first three months.

January, 1793.				*February*, 1793.			
D.	Therm. 7h	Therm. 2h	Weather.	Therm. 7h	Therm. 2h	Weather.
1	27	30	Cloudy.	9	26	Fair, hazy.
2	30	41	Fair, cloudy.	25	34	Rain, ditto.
3	30	33	Cloudy, rain.	33	37	Cloudy, fair.
4	38	41	Rain, cloudy.	25	46	Cloudy, fair.
5	35	42	Fair, cloudy.	36	44	Cloudy, ditto.
6	33	47	Cloudy, fair.	35	46	Cloudy, rain.
7	38	51	Fair, fair.	36	40	Cloudy, fair,
8	32	49	Fair, ditto.	28	44	Cloudy, ditto.
9	33	48	Hazy, fair.	42	50	Rain, fair.
10	38	51	Fair, ditto.	38	40	Cloudy, fair.
11	35	48	Fair, clouds.	19	27	Fair, cloudy.
12	31	42	Fair, ditto.	20	28	Snow, cloudy.
13	28	42	Fair, ditto.	22	31	Cloudy, snow.
14	25	27	Hail, snow, sleet.	27	39	Cloudy, fair.
15	32	37	Clouds, mist.	18	40	Fair, ditto.
16	37	39	Rain, ditto.	29	42	Cloudy, ditto.
17	37	45	Rain, snow, fair.	44	48	Rain, ditto.
18	32	52	Fair, ditto.	39	49	Cloudy, fair.
19	37	48	Fair, ditto.	31	41	Cloudy, rain.
20	33	47	Hazy, cloudy.	52	53	Rain, fair.
21	36	47	Cloudy, fair.	37	49	Fair, ditto.
22	27	32	Fair, ditto.	29	34	Fair, ditto.
23	22	37	Fair, ditto.	22	34	Snow, cloudy.
24	30	39	Cloudy, ditto.	54	59	Rain, cloudy.
25	30	41	Fair, hazy.	34	35	Cloudy, ditto.
26	31	---	Fair.	35	43	Rain, mist.
27	23	38	Fair, cloudy, snow.	43	43	Rain, cloudy.
28	35	45	Cloudy, fair.	14	26	Fair, ditto.
29	29	37	Fair, ditto.			
30	22	23	Snow, hail.			
31	25	32	Cloudy, fair.			

March, 1793.				*April*, 1793.		
Th rm.			Weather.	Therm		Weather.
D.	7h	2h		7h	2h	
1	20	38	Fair, ditto.	45	70	Cloudy, fair.
2	31	51	Hazy, cloudy.	47	71	Fair, ditto.
3	48	63	Rain, fair.	56	80	Fair, ditto.
4	43	61	Hazy, ditto.	51	72	Cloudy, fair.
5	51	52	Rain, fair.	53	61	Cloudy, rain.
6	32	50	Fair, ditto.	60	76	Misty, fair.
7	36	62	Fair, ditto, clouds.	51	65	Fair, ditto.
8	54	60	Cloudy, rain.	46	74	Fair, ditto.
9	26	41	Fair, ditto.	55	71	Fair, cloudy.
10	29	51	Fair, ditto.	50	56	Fair, ditto.
11	43	55	Rain, ditto.	37	63	Fair, ditto.
12	40	43	Cloudy, ditto.	54	62	Cloudy, rain, fair.
13	38	39	Cloudy, fair.	49	62	Fair, ditto.
14	26	44	Fair, ditto.	50	70	Fair, ditto.
15	32	59	Fair, ditto.	45	55	Rain, cloudy.
16	52	62	Cloudy, fair.	46	62	Cloudy, fair.
17	51	72	Cloudy, fair.	48	67	Fair, clouds, fair.
18	58	69	Hazy, cloudy.	52	66	Cloudy, fair.
19	53	59	Fair, ditto.	52	75	Fair, ditto.
20	42	61	Fair, ditto.	52	49	Rain, cloudy.
21	41	43	Rain, cloudy.	44	47	Cloudy, ditto.
22	31	47	Fair, ditto.	43	46	Rain, cloudy.
23	35	57	Fair, ditto.	42	63	Fair, ditto.
24	37	50	Fair, ditto.	44	68	Fair, ditto.
25	35	59	Fair, ditto.	45	65	Cloudy, ditto.
26	47	54	Cloudy, rain.	53	57	Cloudy, rain.
27	43	51	Fair, cloudy.	47	46	Rain, ditto.
28	33	45	Fair, clouds, fair.	44	54	Rain, cloudy.
29	34	57	Fair, ditto.	40	59	Fair, ditto.
30	41	58	Cloudy, fair.	40	65	Fair, ditto.
31	42	61	Cloudy, fair.			

May, 1793.				*June*, 1793.			
D.	Therm. 7h	Therm. 2h	Weather.	Therm. 7	Therm. 2h	Weather.
1	45	69	Foggy, cloudy.	53	61	Rain, showery.
2	52	73	Fog, clouds, fair.	54	64	Clouds, showers.
3	60	63	Rain, ditto.	55	62	Cloudy, rain, fair.
4	60	80	Fair, ditto.	54	60	Rain, do. cloudy.
5	55	56	Cloudy, ditto.	58	72	Cloudy, fair, rain.
6	47	58	Cloudy, fair.	---	71	Cloudy, rain.
7	50	68	Cloudy, fair.	68	78	Fair, ditto.
8	59	78	Cloudy, fair.	65	---	Fair, ditto.
9	61	79	Foggy, fair.	70	88	Fog, fair.
10	65	71	Rain, hazy.	74	90	Fair, ditto.
11	55	75	Cloudy, fair.	76	90	Fair, ditto.
12	61	76	Cloudy, rain.	75	88	Fair, showers.
13	57	78	Fair, ditto.	74	81	Cloudy, rain.
14	59	83	Fair, cloudy.	63	77	Fair, ditto.
15	60	71	Fair, ditto.	63	82	Fair, hazy.
16	50	69	Fair, ditto.	67	85	Fair, ditto.
17	48	74	Fair, ditto.	74	89	Fair, showers.
18	61	81	Cloudy, fair.	73	88	Fair, ditto.
19	65	85	Fair, rain.	77	91	Fair, ditto.
20	65	87	Fair, ditto.	79	88	Fair, rain, fair.
21	68	86	Fair, ditto, clouds.	75	85	Cloudy, rain.
22	72	80	Clouds, gusts.	58	78	Cloudy, fair.
23	94	79	Cloudy, fair.	58	78	Fair, ditto.
24	58	75	Fair, ditto.	60	79	Fair, ditto.
25	52	70	Fair, cloudy.	67	74	Cloudy, rain,
26	61	66	Rain, ditto.	66	69	Cloudy, rain.
27	68	84	Cloudy, fair.	68	80	Cloudy, fair.
28	70	68	Fair, clouds, rain.	71	85	Cloudy, fair.
29	57	62	Cloudy, rain, clouds.	77	88	Cloudy, ditto.
30	54	57	Cloudy, rain.	74	90	Fair, ditto.
31	54	60	Clouds, ditto.			

JULY, 1793.

Days.	Barom. 6 A. M.	Barom. 3 P. M.	Ther. 6 A. M.	Ther. 3 P. M.	Winds. 6 A. M.	Winds. 3 P. M.	Weather.
1	30 0	29 9	77	88	W	W	fair.
2	29 8	29 7	77	81	W		fair, showers.
3	29 9	30 0	74	80	E	E	cloudy.
4	30 1	30 0	70	83	E	SW	cloudy, fair, rain.
5	30 0	29 9	76	90	NW	SW	fair, ditto.
6	29 9	29 9	78	91	SW	SW	cloudy, thunder.
7	29 9	30 0	73	88	NE	NW	fair, clouds.
8	30 1	30 1	72	85	E	E	cloudy, fair.
9	30 0	29 8	73	81	S	SW	cloudy, ditto.
10	30 0	30 0	70	84	W	NW	fair, ditto.
11	30 0	30 0	74	88	NW	NW	fair, clouds.
12	30 1	30 2	70	84	N	N	fair, ditto.
13	30 1	30 0	68	83	NW	NW	fair, ditto.
14	30 0	30 0	65	80	N	Calm	fair, hazy.
15	30 0	29 9	66	75	SW	SW	cloudy, ditto.
16	29 8	29 7	70	83	W	W	rain, fair.
17	29 8	29 9	68	81	NW	NW	fair, ditto.
18	30 0	30 0	66	86	W	SW	fair, ditto.
19	29 9	29 9	75	85	SW	W	fair, cloudy, rain.
20	30 0	30 0	72	87	W	NW	fair, ditto, shower.
21	30 1	30 1	70	86	NW	NW	fair, ditto.
22	30 0	30 0	72	87	SW	SW	fair, ditto.
23	30 0	30 0	73	91	SW	SW	fair, cloudy.
24	29 9	29 9	75	89	Calm	W	cloudy, fair.
25	30 1	30 1	71	83	NW	NNW	fair, ditto.
26	30 2	30 2	63	82	N	NE	fair, ditto.
27	30 2	30 1	64	81	S calm	S	fair, cloudy.
28	30 1	30 0	72	85	Calm	NNE	cloudy, fair.
29	30 1	30 1	74	85	SSE	NE	cloudy, ditto, rain.
30	30 1	30 0	73	86	S	SW	cloudy, fair.
31	29 9	29 8	76	80	SSW	SW	cloudy, rain, fair.

AUGUST, 1793.

Days.	Barom. 6 A. M.	Barom. 3 P. M.	Ther. 6 A. M.	Ther. 3 P. M.	Winds. 6 A. M.	Winds. 3 P. M.	Weather. 6 A. M.	Weather. 3 P. M.
1	29 95	30 0	65	77	WNW	NW	cloudy,	fair,
2	30 1	30 1	63	81	NW	SW	fair,	fair,
3	30 6	29 95	62	82	N	NNE	fair,	fair,
4	29 97	30 0	65	87	S	SW	fair,	fair,
5	30 5	30 1	73	90	SSW	SW	fair,	fair,
6	30 2	30 0	77	87	SW	W	cloudy,	fair,
7	30 12	30 1	68	83	NW	W	fair,	fair,
8	30 1	29 95	69	86	SSE	SSE	fair,	rain,
9	29 8	29 75	75	85	SSW	SW	cloudy,	fair,
10	29 9	29 9	67	82	W	SW	fair,	fair,
11	30 0	30 0	70	84	SW	WSW	cloudy,	cloudy,
12	30 0	30 0	70	87	W	W	fair,	fair,
13	30 5	30 0	71	89	SW	W	fair,	fair,
14	30 0	29 95	75	82	SW	SW	fair,	rain,
15	30 0	30 1	72	75	NNE	NE	fair,	cloudy,
16	30 1	30 1	70	83	NNE	NE	fair,	fair,
17	30 1	30 0	71	86	SW	SW	fair,	fair,
18	30 1	30 1	73	89	calm	SW	fair,	fair,
19	30 1	30 0	72	82	N	N	fair,	cloudy,
20	30 1	30 12	69	82	NNE	NNE	fair,	fair,
21	30 15	30 25	62	83	N	NNE	fair,	fair,
22	30 3	30 35	63	86	NE	SE	fair,	fair,
23	30 25	30 15	63	85	calm	S	fair,	fair,
24	30 1	30 1	73	81	calm	calm	cloudy,	rain,
25	30 1	30 1	71	66	NE	NE	rain,	gr. rain,
26	30 15	30 2	59	69	NE	NE	cloudy,	cloudy,
27	30 2	30 2	65	73	NE	NE	cloudy,	cloudy,
28	30 2	30 15	67	80	S	calm	cloudy,	clearin.
29	30 16	30 15	72	86	calm	SW	cloudy,	fair,
30	30 1	30 1	74	87	calm	SW	fair,	fair,
31	30 0	30 0	74	84	SW	NW	rain,	fair.

SEPTEMBER, 1793.

Days.	Barom. 6 A. M.	Barom. 3 P. M.	Ther. 6 A. M.	Ther. 3 P. M.	Winds. 6 A. M.	Winds. 3 P. M.	Weather. 6 A. M.	Weather. 3 P. M.
1	30 0	29 30	71	86	calm	SW	fog,	fair,
2	29 75	29 8	73	86	SW	SW	fair,	fair,
3	30 0		60		NW	N	fair,	fair,
4	30 15	30 15	55	75	W	W	fair,	fair,
5	30 15	30 1	62	80	SE	S	fair,	cloudy,
6	29 97	29 95	70	89	WSW	W	fair,	cloudy,
7	30 0	30 0	65	77	WNW	NW	fair,	fair,
8	30 1	30 1	64	70	calm	calm	cloudy,	cloudy,
9	30 0	30 0	66	80	SE	NW	rain,	fair,
10	30 0	30 0	64	72	N	NNE	fair,	cloudy,
11	30 1	30 0	62	72	NNE	N	cloudy,	fair,
12	29 96	29 9	58	76	NW	NNW	fair,	fair,
13	29 95	30 0	57	72	NW	N	fair,	fair,
14	30 0	30 5	58	79	NW	N W	fair,	fair,
15	30 0	29 97	65	80	N	S	fair,	fair,
16	29 9	29	70	84	S	SW	cloudy,	fair,
17	29 8	29 85	66	67	N	N	cloudy,	cloudy,
18	30 3		44		N		fair,	
19	30 4	30 35	45	70	calm	SW	fair,	fair,
20	30 3	30 15	54	69	calm	SE	hazy,	hazy,
21	30 0	29 0	59	78	calm		cloudy,	fair,
22	30 0	30 0	63	83	calm		cloudy,	fair,
23	30 1	30 1	62	8	calm	SE	cloudy,	cloudy,
24	30 2	30 2	65	70	NE	ENE	cloudy,	fair,
25	30 15	30 0	61	68	NE	NE	cloudy,	cloudy,
26	29 8	29 7	58	79	N	N	cloudy,	fair,
27	29 7		64		NW	NW	cloudy,	fair,
28	30 5	30 15	54	73	NW	NW	fair,	fair,
29	30 3	30 3	56	74	NE	ENE	cloudy,	fair,
30	30 35	30 3	57	75	calm	SW	foggy,	fair.

OCTOBER, 1793.

Days.	Barom. 7 A. M.		Barom. 2 P. M.		Ther. 7 A. M.	Ther. 2 P. M.	Winds. 7 A. M.	Winds. 2 P. M.	Weather. 7 A. M.	Weather. 2 P. M.
1	30	15	30	5	64	80	SW	SW	cloudy,	fair,
2	29	9	30	5	70	72	W	NNW	cloudy,	fair,
3	30	2	30	15	50	72	W	SW	fair,	fair,
4	29	75	29	7	59	72	SW	W	cloudy,	cloudy,
5	30	0	30	1	58	66	N	N	fair,	fair,
6	30	3	30	3	43	66	NE	W	fair,	fair,
7	30	45			46		calm		fair,	
8	30	6	30	6	53	68	N	N	fair,	fair,
9	30	5	30	4	53	70	NW	NW	fair,	fair,
10	30	2	30	2	49	74	E	NW	fair,	fair,
11	30	0	29	85	51	74	W	W	fair,	fair,
12	29	6	29	55	58	64	SW	NW	rain,	rain,
13	29	85	29	9	49	69	NW	NW	fair,	fair,
14	30	5	30	0	52	76	SW	SW	calm,	fair,
15	29	75	29	8	56	54	SW	N	fair,	rain,
16	30	0	30	0	37	53	NNW	N	fair,	fair,
17	30	1	30	1	37	60	NE	NE	fair,	fair,
18	30	1	30	1	41	62	NW	NW	fair,	fair,
19	30	0	29	9	51	66	N	N	cloudy,	fair,
20	30	0	30	0	44	54	NW	N	fair,	fair,
21	30	0	30	2	49	59	N	NW	fair,	fair,
22	29	6	29	5	51	65	NW	NW	fair,	fair,
23	29	8	29	8	47	60	W	W	fair,	fair,
24	30	3	30	4	36	59	W	NW	fair,	fair,
25	30	4	30	3	46	71	S	S	cloudy,	do. h-w.
26	30	2	30	2	60	72	calm	SW	cloudy,	cloudy,
27	30	3	30	3	44	44	NNE	NNE	cloudy,	cloudy,
28	30	2	30	1	34	37	N	N	cloudy,	cloudy,
29	29	85	29	85	28	44	NNW	NW	fair,	fair,
30	30	1	30	1	28	49	calm	SW	hazy,	hazy,
31	30	15	30	2	42	45	calm	NNE	cloudy,	rain.

NOVEMBER, 1793.

Days.	Barom.				Ther.		Winds.		Weather.	
	7 A. M.		2 P. M.		7 A. M.	2 P. M.	7 A. M.	2 P. M.	7 A. M.	2 P. M.
1	30	1	30	1	40	41	NNE	NE	rain,	cloudy,
2	30	3	30	25	32	49	NNE	NE	fair,	fair,
3	30	1	30	0	43	56	calm	SW	cloudy,	cloudy,
4	29	8	29	9	55	67	SW	SW	cloudy,	fair,
5	30	15	30	1	50	64	NE	NE	rain,	rain,
6	29	8	29	65	63	67	S	S	cloudy,	cloudy,
7	29	8	29	8	44	64	calm	SW	fair,	fair,
1	29	8	29	85	43	56	SSW	SW	fair,	fair,
9	29	9	29	95	42	64	SW	SW	fair,	fair,

OF THE METHOD OF CURE.

IN the introduction to the history of the fever, I mentioned the remedies which I used with success, in several cases which occurred in the beginning of August. I had seen, and recorded in my note book, the efficacy of gentle purges in the yellow fever of 1762; but finding them unsuccessful after the 20th of August, and observing the disease to assume uncommon symptoms of great prostration of strength, I laid them aside, and had recourse to a gentle vomit of ipecacuanha, on the first day of the fever, and to the usual remedies for exciting the action of the sanguiferous system. I gave bark in all its usual forms of infusion, powder, and tincture. I joined wine, brandy, and aromatics with it. I applied blisters to the limbs, neck, and head. Finding them all ineffectual, I attempted to rouse the system by wrapping the whole body, agreeably to Dr.

Hume's practice, in blankets dipped in warm vinegar. To these remedies I added one more: I rubbed the right side with mercurial ointment, with a view of exciting the action of the vessels in the whole system, through the medium of the liver, which I then supposed to be principally, though symptomatically, affected by the disease. None of these remedies appeared to be of any service; for although three out of thirteen recovered, of those to whom they were applied, yet I have reason to believe that they would have recovered much sooner had the cure been trusted to nature. Perplexed and distressed by my want of success in the treatment of this fever, I waited upon Dr. Stephens, an eminent and worthy physician from St. Croix, who happened then to be in our city, and asked for such advice and information upon the subject of the disease, as his extensive practice in the West-Indies would naturally suggest. He politely informed me, that he had long ago laid aside evacuations of all kinds in the yellow fever; that they had been found to be hurtful, and that the disease yielded more readily to bark, wine, and, above all, to the use of the cold bath. He advised the bark to be given in large quantities by way of glyster, as well as in the usual way; and he informed me of the manner in which the cold bath should be used, so as to de-

rive the greatest benefit from it. This mode of treating the yellow fever appeared to be reasonable. I had used bark, in the manner he recommended it, in several cases of sporadic yellow fever, with success, in former years. I had, moreover, the authority of several other physicians of reputation in its favour. Dr. Cleghorn tells us, that "he sometimes gave the bark when the bowels were full of vicious humours. These humours (he says) are produced by the fault of the circulation. The bark, by bracing the solids, enables them to throw off the excrementitious fluids, by the proper emunctories*."

I began the use of each of Dr. Stevens's remedies the next day after my interview with him, with great confidence of their success. I prescribed bark in large quantities: in one case I ordered it to be injected into the bowels every four hours. I directed buckets full of cold water to be thrown frequently upon my patients. The bark was offensive to the stomach, or rejected by it, in every case in which I prescribed it. The cold bath was grateful, and produced relief in several cases, by inducing a moisture on the skin. For a while I had hopes of benefit to my patients from

* Page 223.

the use of these remedies, but, in a few days, I was distressed to find they were not more effectual than those I had previously used. Three out of four of my patients died, to whom the cold bath was administered, in addition to the tonic remedies before-mentioned.

Baffled in every attempt to stop the ravages of this fever, I anticipated all the numerous and complicated distresses in our city, which pestilential diseases have so often produced in other countries. The fever had a malignity and an obstinacy which I had never before observed in any disease, and it spread with a rapidity and mortality far beyond what it did in the year 1762. Heaven alone bore witness to the anguish of my soul in this awful situation. But I did not abandon a hope that the disease might yet be cured. I had long believed that good was commensurate with evil, and that there does not exist a disease for which the goodness of Providence has not provided a remedy. Under the impression of this belief I applied myself with fresh ardour to the investigation of the disease before me. I ransacked my library, and pored over every book that treated of the yellow fever. The result of my researches for a while was fruitless. The accounts of the symptoms and cure of the disease by the authors

I consulted were contradictory, and none of them appeared altogether applicable to the prevailing epidemic. Before I desisted from the inquiry to which I had devoted myself, I recollected that I had, among some old papers, a manuscript account of the yellow fever as it prevailed in Virginia in the year 1741, which had been put into my hands by Dr. Franklin, a short time before his death. I had read it formerly, and made extracts from it into my lectures upon that disease. I now read it a second time. I paused upon every sentence; even words in some places arrested and fixed my attention. In reading the history of the method of cure I was much struck with the following passages.

" It must be remarked, that this evacuation (meaning by purges) is more necessary in this than in most other fevers. The abdominal viscera are the parts principally affected in this disease, but by this timely evacuation their feculent corruptible contents are discharged, before they corrupt and produce any ill effects, and their various emunctories and secerning vessels are set open, so as to allow a free discharge of their contents, and consequently a security to the parts themselves, during the course of the disease. By this evacuation the very minera of the disease, pro-

ceeding from the putrid miasmata fermenting with the salivary, bilious, and other inquiline humours of the body, is sometimes eradicated by timely emptying the abdominal viscera, on which it first fixes, after which a gentle sweat does as it were nip it in its bud. Where the primæ viæ, but especially the stomach, is loaded with an offensive matter, or contracted and convulsed with the irritation of its stimulus, there is no procuring a laudable sweat till that is removed; after which a necessary quantity of sweat breaks *out of its own accord*, these parts promoting it when by an absterging medicine they are eased of the burden or stimulus which oppresses them."

"All these acute putrid fevers ever require some evacuation to bring them to a perfect crisis and solution, and that even by stools, which must be promoted by art, where nature does not do the business herself. On this account an *ill-timed scrupulousness about the weakness of the body* is of bad consequence in these urging circumstances; for it is that which seems chiefly to make evacuations necessary, which nature ever attempts, after the humours are fit to be expelled, but is not able to accomplish for the most part in this disease; and I can affirm that I have given a purge in this case, when *the pulse has been so low, that it could*

hardly be felt, and the *debility extreme*, yet *both one and the other* have been *restored by it.*"

"This evacuation must be procured by *lenitive chologoque* purges."

Here I paused. A new train of ideas suddenly broke in upon my mind. I believed the weak and low pulse which I had observed in this fever, to be the effect of debility from a depressed state of the system, but the unsuccessful issue of purging, and even of a spontaneous diarrhœa, in a patient of Dr. Hutchinson, had led me not only to doubt of, but to dread its effects. My fears from this evacuation were confirmed, by the communications I had received from Dr. Stevens. I had been accustomed to raising a weak and low pulse in pneumony and apoplexy, by means of blood-letting, but I had attended less to the effects of purging in producing this change in the pulse. Dr. Mitchell in a moment dissipated my ignorance and fears upon this subject. I adopted his theory and practice, and resolved to follow them. It remained now only to fix upon a suitable purge to answer the purpose of discharging the contents of the bowels. I have before described the state of the bile in the gall-bladder and duodenum, in an extract from the history

of a dissection made by Dr. Mitchell. I suspected that my want of success in discharging this bile, in several of the cases in which I attempted the cure by purging, was owing the feebleness of my purges. I had been in the habit of occasionally purging with calomel in bilious and inflammatory fevers, and had recommended the practice the year before in my lectures, not only from my own experience, but upon the authority of Dr. Clark. I had, moreover, other precedents for its use in the practice of sir John Pringle, Dr. Cleghorn, and Dr. Balfour, in diseases of the same class with the yellow fever. But these were not all my vouchers for the safety and efficacy of calomel. In my attendance upon the military hospitals during the late war, I had seen it given combined with jalap in the bilious fever by Dr. Thomas Young, a senior surgeon in the hospitals. His usual dose was ten grains of each of them. This was given once or twice a day until it procured large evacuations from the bowels. For a while I remonstrated with the doctor against this purge, as being disproportioned to the violence and danger of the fever; but I was soon satisfied that it was as safe as cremor tartar or glauber's salts. It was adopted by several of the surgeons of the hospital, and was universally known, and sometimes prescribed, by the simple name of *ten* and *ten*. This mode of

giving calomel occurred to me in preference to any other. The jalap appeared to be a necessary addition to it, in order to quicken its passage through the bowels; for calomel is slow in its operation, more especially when it is given in large doses. I resolved, after mature deliberation, to prescribe this purge. Finding ten grains of jalap insufficient to carry the calomel through the bowels in the rapid manner I wished, I added fifteen grains of the former to ten of the latter; but even this dose was slow and uncertain in its operation. I then issued three doses, each consisting of fifteen grains of jalap and ten of calomel; one to be given every six hours until they procured four or five large evacuations. The effects of this powder not only answered, but far exceeded my expectations. It perfectly cured four out of the first five patients to whom I gave it, notwithstanding some of them were advanced several days in the disease. Mr. Richard Spain, a block-maker, in Third-street, took eighty grains of calomel, and rather more of rhubarb and jalap mixed with it, on the two last days of August, and on the first day of September. He had passed twelve hours, before I began to give him this medicine, without a pulse, and with a cold sweat on all his limbs. His relations had given him over, and one of his neighbours complained to me of my neglecting to advise them to make im-

mediate preparations for his funeral. But in this situation I did not despair of his recovery, Dr. Mitchell's account of the effects of purging in raising the pulse, exciting a hope that he might be saved, provided his bowels could be opened. I now committed the exhibition of the purging medicine to Mr. Stall, one of my pupils, who mixed it, and gave it with his own hand, three or four times a day. At length it operated, and produced two copious, fœtid stools. His pulse rose immediately afterwards, and a universal moisture on his skin succeeded the cold sweat on his limbs. In a few days he was out of danger, and soon afterwards appeared in the streets in good health, as the first fruits of the efficacy of mercurial purges in the yellow fever.

After such a pledge of the safety and success of my new medicine, I gave it afterwards with confidence. I communicated the prescription to such of the practitioners as I met in the streets. Some of them I found had been in the use of calomel for several days, but as they had given it in small and single doses only, and had followed it by large doses of bark, wine, and laudanum, they had done little or no good with it. I imparted the prescription to the college of physicians, on the third of September, and endeavoured to remove the fears of my

fellow-citizens, by assuring them that the disease was no longer incurable. Mr. Lewis, the lawyer, Dr. M'Ilvaine, Mrs. Bethel, her two sons, and a servant maid, and Mr. Peter Baynton's whole family (nine in number), were some of the first trophies of this new remedy. The credit it acquired, brought me an immense accession of business. It still continued to be almost uniformly effectual in all those which I was able to attend, either in person, or by my pupils. Dr. Griffitts, Dr. Say, Dr. Pennington, and my former pupils who had settled in the city, viz. Dr. Leib, Dr. Porter, Dr. Annan, Dr. Woodhouse, and Dr. Mease, were among the first physicians who adopted it. I can never forget the transport with which Dr. Pennington ran across Third-street to inform me, a few days after he began to give strong purges, that the disease yielded to them in every case. But I did not rely upon purging alone to cure the disease. The theory of it which I had adopted led me to use other remedies to abstract excess of stimulus from the system. These were *blood-letting*, *cool air*, *cold drinks*, *low diet*, and *applications of cold water* to the body. I had bled Mrs. Bradford, Mrs. Leaming, and one of Mrs. Palmer's sons with success, early in the month of August. But I had witnessed the bad effects of bleeding in the first week in September, in two of my patients who had been bled without

my knowledge, and who appeared to have died in consequence of it. I had, moreover, heard of a man who had been bled on the first day of the disease, who died in twelve hours afterwards. These cases produced caution, but they did not deter me from bleeding as soon as I found the disease to change its type, and instead of tending to a crisis on the third, to protract itself to a later day. I began by drawing a small quantity at a time. The appearance of the blood, and its effects upon the system, satisfied me of its safety and efficacy. Never before did I experience such sublime joy as I now felt in contemplating the success of my remedies. It repaid me for all the toils and studies of my life. The conquest of this formidable disease was not the effect of accident, nor of the application of a single remedy; but it was the triumph of a principle in medicine. The reader will not wonder at this joyful state of my mind when I add a short extract from my note book, dated the 10th of September. "Thank God! out of one hundred patients, whom I have visited or prescribed for this day, I have lost none."

Being unable to comply with the numerous demands which were made upon me for the purging powders, notwithstanding I had requested my sister, and two other persons to assist my pupils in

putting them up; and, finding myself unable to attend all the persons who sent for me, I furnished the apothecaries with the recipe for the mercurial purges, together with printed directions for giving them, and for the treatment of the disease.

Hitherto there had been great harmony among the physicians of the city, although there was a diversity of sentiment as to the nature and cure of the prevailing fever. But this diversity of sentiment and practice was daily lessening, and would probably have ceased altogether in a few days, had it not been prevented by two publications, the one by Dr. Kuhn, and the other by Dr. Stevens, in which they recommended bark, wine, and other cordials, and the cold bath, as the proper remedies for the disease. The latter dissuaded from the use of evacuations of all kinds. This method of cure was supported by a letter from Alexander Hamilton, Esq. then secretary of the treasury of the United States, to the college of physicians, in which he ascribed his recovery from the fever to the use of those remedies, administered by the hand of Dr. Stevens. The respectable characters of those two physicians procured an immediate adoption of the mode of practice recommended by them, by most of the physicians of the city, and a general confidence in it by all classes of citizens

Had I consulted my interest, or regarded the certain consequences of opposing the use of remedies rendered suddenly popular by the names that were connected with them, I should silently have pursued my own plans of cure, with my old patients who still confided in them; but I felt, at this season of universal distress, my professional obligations to *all* the citizens of Philadelphia to be superior to private and personal considerations, and therefore determined at every hazard to do every thing in my power to save their lives. Under the influence of this disposition, I addressed a letter to the college of physicians, in which I stated my objections to Dr. Kuhn and Dr. Stevens's remedies, and defended those I had recommended. I likewise defended them in the public papers against the attacks that were made upon them by several of the physicians of the city, and occasionally addressed such advice to the citizens as experience had suggested to be useful to *prevent* the disease, particularly low diet, gentle doses of laxative physic, avoiding its exciting causes, and prompt applications for medical aid. In none of the recommendations of my remedies did I claim the credit of their discovery. On the contrary, I constantly endeavoured to enforce their adoption, by mentioning precedents in favour of their efficacy, from the highest authorities in medicine. This

controversy with my brethren, with whom I had long lived in friendly intercourse, carried on amidst the most distressing labours, was extremely painful to me, and was submitted to only to prevent the greater evil of the depopulation of our city by the use of remedies which had been prescribed by myself, as well as others, not only without effect, but with evident injury to the sick. The repeated and numerous instances of their inefficacy, in some of the most opulent families in the city, and the almost uniform success of the depleting remedies, happily restored the public mind, after a while, from its distracted state, and procured submission to the latter from nearly all the persons who were affected by the fever.

Besides the two modes of practice which have been described, there were two others: the one consisted of *moderate* purging with calomel only, and moderate bleeding, on the first or second day of the fever, and afterwards by the copious use of bark, wine, laudanum, and aromatic tonics. This practice was supported by an opinion, that the fever was inflammatory in its first, and putrid in its second stage. The other mode referred to was peculiar to the French physicians, several of whom had arrived in the city from the West-Indies, just before the disease made its appearance. Their re-

medies were various. Some of them prescribed nitre, cremor tartar, camphor, centaury tea, the warm bath, glysters, and moderate bleeding, while a few used lenient purges, and large quantities of tamarind water, and other diluting drinks. The dissentions of the American physicians threw a great number of patients into the hands of these French physicians. They were moreover supposed to be better acquainted with the disease than the physicians of the city, most of whom, it was well known, had never seen it before.

I shall hereafter inquire into the relative success of each of the four modes of practice which have been mentioned.

Having delivered a general account of the remedies which I used in this disease, I shall now proceed to make a few remarks upon each of them. I shall afterwards mention the effects of the remedies used by other physicians.

OF PURGING.

I HAVE already mentioned my reasons for promoting this evacuation, and the medicine I preferred for that purpose. It had many advantages over any other purge. It was detergent to the bile and mucus which lined the bowels. It probably acted in a peculiar manner upon the biliary ducts, and it was rapid in its operation. One dose was sometimes sufficient to open the bowels; but from two to six doses were often necessary for that purpose; more especially as part of them was frequently rejected by the stomach. I did not observe any inconvenience from the vomiting which was excited by the jalap. It was always without that straining which was produced by emetics; and it served to discharge bile when it was lodged in the stomach. Nor did I rest the discharge of the contents of the bowels on the issue of one cleansing on the first day. There is, in all bilious fevers, a reproduction of morbid bile as fast as it is discharged. I therefore gave a purge every day while

the fever continued. I used castor oil, salts, cremor tartar, and rhubarb (after the mercurial purges had performed their office), according to the inclinations of my patients, in all those cases where the bowels were easily moved; but where this was not the case, I gave a single dose of calomel and jalap every day. Strong as this purge may be supposed to be, it was often ineffectual; more especially after the 20th of September, when the bowels became more obstinately constipated. To supply the place of the jalap, I now added gamboge to the calomel. Two grains and a half of each, made into a pill, were given to an adult every six hours, until they procured four or five stools. I had other designs in giving a purge every day, besides discharging the re-accumulated bile. I had observed the fever to fall with its principal force upon such parts of the body as had been previously weakened by any former disease. By creating an artificial weak part in the bowels, I diverted the force of the fever to them, and thereby saved the liver and brain from fatal or dangerous congestions. The practice was further justified by the beneficial effects of a plentiful spontaneous diarrhœa in the beginning of the disease*; by hæmorrhages from the

* In some short manuscript notes upon Dr. Mitchell's account of the yellow fever in Virginia, in the year 1741,

bowels, when they occurred from no other parts of the body, and by the difficulty or impracticability of reducing the system by means of plentiful sweats. The purges seldom answered the intentions for which they were given, unless they produced four or five stools a day. As the fever showed no regard to day or night in the hours of its exacerbations, it became necessary to observe the same disregard to time in the exhibition of purges: I therefore prescribed them in the evening, at all times when the patient had passed a day without two or three plentiful stools. When purges were rejected, or slow in their operation, I always directed opening glysters to be given every two hours. The effects of purging were as follow:

1. It raised the pulse when low, and reduced it when it was preternaturally tense or full.

2. It revived and strengthened the patient. This was evident in many cases, in the facility with

made by the late Dr. Kearsley, sen. of this city, he remarks, that in the yellow fever which prevailed in the same year in Philadelphia, "some recovered by an *early* discharge of *black* matter by stool." This gentleman, Dr. Redman informed me, introduced purging with glauber's salts in the yellow fever in our city. He was preceptor to Dr. Redman in medicine.

which patients who had staggered to a close-stool, walked back again to their beds after a copious evacuation. Dr. Sydenham takes notice of a similar increase of strength after a plentiful sweat in the plague. They both acted by abstracting excess of stimulus, and thereby removing the depression of the system.

3. It abated the paroxysm of the fever. Hence arose the advantage of giving a purge in some cases in the evening, when an attack of the fever was expected in the course of the night.

4. It frequently produced sweats when given on the first or second day of the fever, after the most powerful sudorifics had been taken to no purpose.

5. It sometimes checked that vomiting which occurs in the beginning of the disease, and it always assisted in preventing the more alarming occurrence of that symptom about the 4th or 5th day.

6. It removed obstructions in the lymphatic system. I ascribe it wholly to the action of mercury, that in no instance did any of the glandular swellings, which I formerly mentioned, terminate in a suppuration.

7. By discharging the bile through the bowels as soon and as fast as it was secreted, it prevented, in most cases, a yellowness of the skin.

However salutary the mercurial purge was, objections were made to it by many of our physicians; and prejudices, equally weak and ill-founded, were excited against it. I shall enumerate, and answer those objections.

1. It was said to be of too drastic a nature. It was compared to arsenic; and it was called a dose for a horse. This objection was without foundation. Hundreds who took it declared they had never taken so mild a purge. I met with but one case in which it produced bloody stools; but I saw the same effect from a dose of salts. It sometimes, it is true, operated from twenty to thirty times in the course of twenty-four hours; but I heard of an equal number of stools in two cases from salts and cremor tartar. It is not an easy thing to affect life, or even subsequent health, by copious or frequent purging. Dr. Kirkland mentions a remarkable case of a gentleman who was cured of a rheumatism by a purge, which gave him between 40 and 50 stools. This patient had been previously affected by his disease 16 or 18

weeks*. Dr. Mosely not only proves the safety, but establishes the efficacy of numerous and copious stools in the yellow fever. Dr. Say probably owes his life to three and twenty stools procured by a dose of calomel and gamboge, taken by my advice. Dr. Redman was purged until he fainted, by a dose of the same medicine. This venerable gentleman, in whom 70 years had not abated the ardour of humanity, nor produced obstinacy of opinion, came forward from his retirement, and boldly adopted the remedies of purging and bleeding, with success in several families, before he was attacked by the disease. His recovery was as rapid, as the medicine he had used was active in its operation. Besides taking the above purge, he lost twenty ounces of blood by two bleedings†.

* Treatise on the Inflammatory Rheumatism, vol. i. p. 407.

† Dr. Redman was not the only instance furnished by the disease, in which *reason* got the better of the habits of old age, and of the formalities of medicine. About the time the fever declined, I received a letter from Dr. Shippen, sen. (then above 82 years of age), dated Oxford Furnace, New-Jersey, October 13th, 1793, in which, after approving in polite terms of my mode of practice, he adds, "Desperate diseases require desperate remedies. I would only propose some small addition to your present method. Suppose you should substitute, in the room of the jalap, *six* grains of

But who can suppose that a dozen or twenty stools in a day could endanger life, that has seen a diarrhœa continue for several months, attended with fifteen or twenty stools every day, without making even a material breach in the constitution? Hence Dr. Hillary has justly remarked, that "it rarely or never happens that the purging in this disease, though violent, takes the patient off, but the fever and inflammation of the bowels*." Dr. Clark in like manner remarks, that evacuations do not destroy life in the dysentery, but the fever, with the emaciation and mortification which attend and follow the disease†.

2. A second objection to this mercurial purge was, that it excited a salivation, and sometimes

gamboge, to be mixed with ten or fifteen grains of calomel; and after a dose or two, as occasion may require, you should bleed your patients *almost* to death, at least to *fainting*; and then direct a plentiful supply of mallows tea, with fresh lemon juice, and sugar and barley water, together with the most simple, *mild*, and nutricious food." The doctor concludes his letter by recommending to my perusal Dr. Dover's account of nearly a whole ship's crew having been cured of a yellow fever, on the coast of South-America, by being bled until they fainted.

* Diseases of Barbadoes, p. 212.

† Diseases in Voyages to Hot Climates, vol. ii. p. 322.

loosened the teeth. I met with but two cases in which there was a loss of teeth from the use of this medicine, and in both the teeth were previously loose or decayed. The salivation was a trifling evil, compared with the benefit which was derived from it. I lost only one patient in whom it occurred. I was taught, by this accidental effect of mercury, to administer it with other views than merely to cleanse the bowels, and with a success which added much to my confidence in the power of medicine over this disease. I shall mention those views under another head.

3. It was said that the mercurial purge excoriated the rectum, and produced the symptoms of pain and inflammation in that part, which were formerly mentioned.

To refute this charge, it will be sufficient to remark that the bile produces the same excoriation and pain in the rectum in the bilious and yellow fever, where no mercury has been given to discharge it. In the bilious remitting fever which prevailed in Philadelphia in 1780, we find the bile which was discharged by " gentle doses of salts, and cream of tartar, or the butternut pill, was so acrid as to excoriate the rectum, and so offensive

as to occasion, in some cases, sickness and faintness both in the patients, and in their attendants*."

Dr. Hume says further upon this subject, that the rectum was so much excoriated by the natural discharge of bile in the yellow fever, as to render it impossible to introduce a glyster pipe into it.

4. It was objected to this purge, that it inflamed and lacerated the stomach and bowels. In support of this calumny, the inflamed and mortified appearances, which those viscera exhibited upon dissection in a patient who died at the hospital at Bush-hill, were spoken of with horror in some parts of the city. To refute this objection it will only be necessary to review the account formerly given of the state of the stomach and bowels after death from the yellow fever, in cases in which no mercury had been given. I have before taken notice that sir John Pringle and Dr. Cleghorn had prescribed mercurial purges with success in the dysentery, a disease in which the bowels are affected with more irritation and inflammation than in the yellow fever. Dr. Clark informs us that he had adopted this practice. I shall insert the eulogium of this excellent physician upon the use of mercury in the dysentery in

* Vol. i.

his own words. "For several years past, when the dysentery has resisted the common mode of practice, I have administered mercury with the greatest success; and am thoroughly persuaded that it is possessed of powers to *remove inflammation* and *ulceration* of the intestines, which are the chief causes of death in this distemper*."

5. It was urged against this powerful and efficacious medicine, that it was prescribed indiscriminately in all cases, and that it did harm in all weak habits. To this I answer, that there was no person so weak by constitution or a previous disease, as to be injured by a single dose of this medicine. Mrs. Meredith, the wife of the treasurer of the United States, a lady of uncommon delicacy of constitution, took two doses of the powder in the course of twelve hours, not only without any inconvenience, but with an evident increase of strength soon afterwards. Many similar cases might be mentioned. Even children took two or three doses of it with perfect safety. This will not surprise those physicians who have been in the practice of giving from ten to twenty grains of mercury, with an equal quantity of jalap as a worm purge, and from fifty to a hundred

* Vol. ii. p. 342.

grains of calomel, in the course of four or five days, in the internal dropsy of the brain. But I am happy in being able to add further, that many women took it in every stage of pregnancy without suffering the least inconvenience from it. Out of a great number of pregnant women whom I attended in this fever I did not lose one to whom I gave this medicine, nor did any of them suffer an abortion. One of them had twice miscarried in the course of the two or three last years of her life. She bore a healthy child three months after her recovery from the yellow fever.

No one has ever objected to the *indiscriminate* mode of preparing the body for the small-pox by purging medicines. The *uniform* inflammatory diathesis of that disease justifies the practice, in a certain degree, in all habits. The yellow fever admits of a sameness of cure much more than the small-pox, for it is *more* uniformly and more highly inflammatory. An observation of Dr. Sydenham upon epidemics applies, in its utmost extent, to our late fever. "Now it must be observed (says this most acute physician) that some epidemic diseases, in some years, are uniformly and constantly the same*." However diversified our fever was

Vol. i. p. 9.

in some of its symptoms, it was in all cases accompanied by more or less inflammatory diathesis, and by a morbid state of the alimentary canal.

Much has been said of the bad effects of this purge from its having been put up carelessly by the apothecaries, or from its having been taken contrary to the printed directions, by many people. If it did harm in any one case (which I do not believe) from the former of the above causes the fault is not mine. Twenty men employed constantly in putting up this medicine would not have been sufficient to have complied with all the demands which were made of me for it. Hundreds who were in health called or sent for it as well as the sick, in order to have it in readiness in case they should be surprised by the disease in the night, or at a distance from a physician.

In all the cases in which this purge was supposed to have been hurtful, when given on the first or second day of the disease, I believe it was because it was not followed by repeated doses of the same, or of some other purge, or because it was not aided by blood-letting. I am led to make this assertion, not only from the authority of Dr. Sydenham, who often mentions the good effects

of bleeding in moderating or checking a diarrhœa, but by having heard no complaints of patients being purged to death by this medicine, after blood-letting was universally adopted by all the physicians in the city.

It was remarked that the demand for this purging powder continued to increase under all opposition, and that the sale of it by the apothecaries was greatest towards the close of the disease. I shall hereafter say that this was not the case with the West-India remedies.

It is possible that this purge sometimes proved hurtful when it was given on the fifth day of the disease, but it was seldom given for the *first* time after the third day, and when it was, the patient was generally in such a situation that nothing did him either good or harm.

I derived great pleasure from hearing, after the fever had left the city, that calomel had been given with success as a purge in bilious fevers in other parts of the union besides Philadelphia. Dr. Lawrence informed me that he had cured many patients by it of the yellow fever which prevailed in New-York, in the year 1791, and the New-York papers have told us that several practitioners

had been in the habit of giving it in the autumnal fevers, with great success, in the western parts of that state. They had probably learned the use of it from Dr. Young, who formerly practised in that part of the United States, and who lost no opportunity of making its praises public wherever he went.

I have only to add to my account of that purging medicine, that, under an expectation that the yellow fever would mingle some of its bilious symptoms with the common inflammatory fevers of the winter and first spring months, I gave that purge in the form of pills, in every case of inflammatory fever to which I was called. The fatal issue of several fevers in the city, during the winter, in which this precaution had been neglected, convinced me that my practice was proper and useful.

It is to be lamented that all new remedies are forced to pass through a fiery ordeal. Opium and bark were long the objects of terror and invective in the schools of medicine. They were administered only by physicians for many years, and that too with all the solemnity of a religious ceremony. This error, with respect to those medicines, has at last passed away. It will, I hope, soon be succeeded by a time when the prejudices against *ten*

and *ten*, or *ten* and *fifteen*, will sleep with the vulgar fears which were formerly entertained of the bark producing diseases and death, years after it had been taken, by "lying in the bones."

OF BLOOD-LETTING.

THE theory of this fever which led me to administer purges, determined me to use blood-letting, as soon as it should be indicated. I am disposed to believe that I was tardy in the use of this remedy, and I shall long regret the loss of three patients, who might probably have been saved by it. I cannot blame myself for not having used it earlier, for the immense number of patients which poured in upon me, in the first week of September, prevented my attending so much to each of them, as was necessary to determine upon the propriety of this evacuation. I was in the situation of a surgeon in a battle, who runs to every call, and only stays long enough with each soldier to stop

the bleeding of his wound, while the increase of the wounded, and the unexpected length of the battle, leave his original patients to suffer from the want of more suitable dressings. The reasons which determined me to bleed were,

1. The state of the pulse, which became more tense, in proportion as the weather became cool.

2. The appearance of a moist and *white* tongue, on the first day of the disease, a certain sign of an inflammatory fever.

3. The frequency of hæmorrhages from every part of the body, and the perfect relief given in some cases by them.

4. The symptoms of congestion in the brain, resembling those which occur in the first stage of hydrocephalus internus, a disease in which I had lately used bleeding with success.

5. The character of the diseases which had preceded the yellow fever. They were all more or less inflammatory. Even the scarlatina anginosa had partaken so much of that diathesis, as to require bleeding to subdue it.

6. The warm and dry weather which had likewise preceded the fever. Dr. Sydenham attributes a highly inflammatory state of the small-pox to a previously hot and dry summer; and I have since observed, that Dr. Hillary takes notice of inflammatory fevers having frequently succeeded hot and dry weather in Barbadoes*. He informs us further, that the yellow fever is always most acute and inflammatory after a very hot season†.

7. The authority of Dr. Mosely had great weight with me in advising the loss of blood, more especially as his ideas of the highly inflammatory nature of the fever accorded so perfectly with my own.

8. I was induced to prescribe blood-letting by recollecting its good effects in Mrs. Palmer's son, whom I bled on the 20th of August, and who appeared to have been recovered by it.

Having begun to bleed, I was encouraged to continue it by the appearance of the blood, and by the obvious and very great relief my patients derived from it.

* Diseases of Barbadoes, p. 16, 43, 46, 48, 52, 122.

† Page 147.

The following is a short account of the appearances of the blood drawn from a vein in this disease.

1. It was, in the greatest number of cases, without any separation into crassamentum and serum, and of a scarlet colour.

2. There was in many cases a separation of the blood into crassamentum and *yellow* serum.

3. There were a few cases in which this separation took place, and the serum was of a *natural* colour.

4. There were many cases in which the blood was as sizy as in pneumony and rheumatism.

5. The blood was in some instances covered above with blue pellicle of sizy lymph, while the part which lay in the bottom of the bowl was dissolved. The lymph was in two cases mixed with green streaks.

6. It was in a few instances of a dark colour, and as fluid as molasses. I saw this kind of blood in a man who walked about his house during the whole of his sickness, and who finally recovered.

Both this, and the fifth kind of blood which has been mentioned, occurred chiefly where bleeding had been omitted altogether, or used too sparingly in the beginning of the disease.

7. In some patients the blood, in the course of the disease, exhibited nearly *all* the appearances which have been mentioned. They were varied by the time in which the blood was drawn, and by the nature and force of the remedies which had been used in the disease.

The effects of blood-letting upon the system were as follow:

1. It raised the pulse when depressed, and quickened it, when it was preternaturally slow, or subject to intermissions.

2. It reduced its force and frequency.

3. It checked in many cases the vomiting which occurred in the beginning of the disease, and thereby enabled the stomach to retain the purging medicine. It likewise assisted the purge in preventing the dangerous or fatal vomiting which came on about the fifth day.

4. It lessened the difficulty of opening the bowels. Upon this account, in one of my addresses to the citizens of Philadelphia, I advised bleeding to be used *before*, as well as after taking the mercurial purge. Dr. Woodhouse informed me that he had several times seen patients call for the close-stool while the blood was flowing from the vein.

5. It removed delirium, coma, and obstinate wakefulness. It also prevented or checked hæmorrhages; hence perhaps another reason why not a single instance of abortion occurred in such of my female patients as were pregnant.

6. It disposed, in some cases, to a gentle perspiration.

7. It lessened the sensible debility of the system; hence patients frequently rose from their beds, and walked across their rooms, in a few hours after the operation had been performed.

8. The redness of the eyes frequently disappeared in a few hours after bleeding. Mr. Coxe observed a dilated pupil to contract to its natural size within a few minutes after he had bound up the arm of his patient. I remarked, in the former part of this work, that blindness in many instances

attended or followed this fever. But two such cases occurred among my patients. In one of them it was of short continuance, and in the other it was probably occasioned by the want of sufficient bleeding. In every case of blindness that came to my knowledge bleeding had been omitted, or used only in a very moderate degree.

9. It eased *pain*. Thousands can testify this effect of blood-letting. Many of my patients whom I bled with my own hand acknowledged to me, while the blood was flowing, that they were better; and some of them declared, that all their pains had left them before I had completely bound up their arms.

10. But blood-letting had, in many cases, an effect the opposite of *easing* pain. It frequently increased it in every part of the body, more especially in the head. It appeared to be the effect of the system rising suddenly from a state of great depression, and of an increased action of the blood-vessels which took place in consequence of it. I had frequently seen complaints of the breast, and of the head, made worse by a single bleeding, and from the same cause. It was in some cases an unfortunate event in the yellow fever, for it prevented the blood-letting being repeated, by excit-

ing or strengthening the prejudices of patients and physicians against it. In some instances the patients grew worse after a second, and, in one, after a third bleeding. This was the case in Miss Redman. Her pains increased after three bleedings, but yielded to the fourth. Her father, Dr. Redman, concurred in this seemingly absurd practice. It was at this time my old preceptor in medicine reminded me of Dr. Sydenham's remark, that moderate bleeding did harm in the plague where copious bleeding was indicated, and that in the cure of that disease, we should leave nature wholly to herself, or take the cure altogether out of her hands. The truth of this remark was very obvious. By taking away as much blood as restored the blood-vessels to a morbid degree of action, without reducing this action afterwards, pain, congestion, and inflammation were frequently increased, all of which were prevented, or occurred in a less degree, when the system rose gradually from the state of depression which had been induced by the great force of the disease. Under the influence of the facts and reasonings which have been mentioned I bore the same testimony in acute cases, against what was called *moderate* bleeding that I did against bark, wine, and laudanum in this fever.

11. Blood-letting, when used *early* on the first day, frequently strangled the disease in its birth, and generally rendered it more light, and the convalescence more speedy and perfect. I am not sure that it ever shortened the duration of the fever where it was not used within a few hours of the time of its attack. Under every mode of treatment it seemed disposed, after it was completely formed, to run its course. I was so satisfied of this peculiarity in the fever, that I ventured in some cases to predict the day on which it would terminate, notwithstanding I took the cure entirely out of the hands of nature. I did not lose a patient on the third, whom I bled on the first or second day of the disease.

12. In those cases which ended fatally, blood-letting restored, or preserved the use of reason, rendered death easy, and retarded the putrefaction of the body after death.

I shall now mention some of the circumstances which directed and regulated the use of this remedy.

1. Where bleeding had been omitted for three days, in acute cases, it was seldom useful. Where purging had been used, it was sometimes success-

ful. I recovered two patients who had taken the mercurial purges, whom I bled for the first time on the seventh day. One of them was the daughter of Mr. James Cresson, the other was a journeyman ship-carpenter at Kensington. In those cases where bleeding had been used on the first day, it was both safe and useful to repeat it every day afterwards, during the continuance of the fever.

2. I preferred bleeding in the exacerbation of the fever. The remedy here was applied when the disease was in its greatest force. A single paroxysm was like a sudden squall to the system, and, unless abated by bleeding or purging, often produced universal disorganization. I preferred the former to the latter remedy in cases of great danger, because it was more speedy, and more certain in its operation.

3. I bled in several instances in the remission of the fever, where the pulse was tense and corded. It lessened the violence of the succeeding paroxysm.

4. I bled in all those cases in which the pulse was preternaturally slow, provided it was tense. Mr. Benj. W. Morris, Mr. Thomas Wharton, jun. and Mr. Wm. Sansom, all owe their lives probably to their having been bled in the above

state of the pulse. I was led to use bleeding in this state of the pulse, not only by the theory of the disease which I had adopted, but by the success which had often attended this remedy, in a slow and depressed state of the pulse in apoplexy and pneumony. I had moreover the authority of Dr. Mosely in its favour, in the yellow fever, and of Dr. Sydenham, in his account of a new fever, which appeared in the year 1685. The words of the latter physician are so apposite to the cases which have been mentioned, that I hope I shall be excused for inserting them in this place. "All the symptoms of weakness (says our author) proceed from nature's being in a manner oppressed and overcome by the first attack of the disease, so as not to be able to raise regular symptoms adequate to the violence of the fever. I remember to have met with a remarkable instance of this, several years ago, in a young man I then attended; for though he seemed in a manner expiring, yet the outward parts felt so cool, that I could not persuade the attendants he had a fever, which could not disengage, and show itself clearly, because the vessels were so full as to obstruct the motion of the blood. However, I said, that they would soon find the fever rise high enough upon bleeding him. Accordingly, after taking away a large quantity of blood, as violent a fever appeared as ever I met with, and

did not go off till bleeding had been used three or four times*."

5. I bled in those cases in which the fever appeared in a tertian form, provided the pulse was full and tense. I well recollect the surprise with which Mr. Van Berkel heard this prescription from me, at a time when he was able to walk and ride out on the intermediate days of a tertian fever. The event which followed this prescription showed that it was not disproportioned to the violence of his disease, for it soon put on such acute and inflammatory symptoms as to require six subsequent bleedings to subdue it.

6. I bled in those cases where patients were able to walk about, provided the pulse was the same as has been mentioned under the fourth head. I was determined as to the propriety of bleeding in these two supposed mild forms of the fever, by having observed each of them, when left to themselves, frequently to terminate in death.

7. I paid no regard to the dissolved state of the blood, when it appeared on the first or second day of the disease, but repeated the bleedings after-

* Vol. ii. p. 351.

wards in every case, where the pulse continued to indicate it. It was common to see sizy blood succeed that which was dissolved. This occurred in Mr. Josiah Coates, and Mr. Samuel Powel. Had I believed that this dissolved state of the blood arose from its putrefaction, I should have laid aside my lancet as soon as I saw it; but I had long ago parted with all ideas of putrefaction in bilious fevers. The refutation of this doctrine was the object of one of my papers in the Medical Society of Edinburgh, in the year 1767. The dissolved appearance of the blood, I suppose to be the effect of a certain action of the blood-vessels upon it. It occurs in fevers which depend upon the sensible qualities of the air, and in which no putrid or foreign matter has been introduced into the system.

8. The presence of petechiæ did not deter me from repeating blood-letting, where the pulse retained its fulness or tension. I prescribed it with success in the cases of Dr. Mease, and of Mrs. Gebler, in Dock-street, in each of whom petechiæ had appeared. Bleeding was equally effectual in the case of the Rev. Mr. Keating, at a time when his arms were spotted with that species of eruptions which I have compared to moscheto-bites. I had

precedents in Dr. De Haen* and Dr. Sydenham†, in favour of this practice. So far from viewing these eruptions as signs of putrefaction, I considered them as marks of the highest possible inflammatory diathesis. They disappeared in each of the above cases after bleeding.

9. In determining the quantity of blood to be drawn, I was governed by the state of the pulse, and by the temperature of the weather. In the beginning of September, I found one or two moderate bleedings sufficient to subdue the fever; but in proportion as the system rose by the diminution of the stimulus of heat, and the fever put on more *visible* signs of inflammatory diathesis, more frequent bleedings became necessary. I bled many patients twice, and a few three times a day. I preferred frequent and small, to large bleedings, in the beginning of September; but towards the height and close of the epidemic, I saw no inconvenience from the loss of a pint, and even twenty ounces of blood at a time. I drew from many persons seventy and eighty ounces in five days; and from a few, a much larger quantity. Mr. Gribble, cedar-cooper, in Front-street, lost by

* Ratio Medendi, vol. ii. p. 162. vol. iv. p. 172.

† Vol. i. p. 210, and 264.

ten bleedings a hundred ounces of blood; Mr. George, a carter in Ninth-street, lost about the same quantity by five bleedings; and Mr. Peter Mierken, one hundred and fourteen ounces in five days. In the last of the above persons the quantity taken was determined by weight. Mr. Toy, blacksmith near Dock-street, was eight times bled in the course of seven days. The quantity taken from him was about a hundred ounces. The blood in all these cases was dense, and in the last, very sizy. They were all attended in the month of October, and chiefly by my pupil, Mr. Fisher; and they were all, years afterwards, living and healthy instances of the efficacy of copious blood-letting, and of the intrepidity and judgment of their young physician. Children, and even old people, bore the loss of much more blood in this fever than in common inflammatory fevers. I took above thirty ounces, in five bleedings, from a daughter of Mr. Robert Bridges, who was then in the 9th year of her age. Even great debility, whether natural or brought on by previous diseases, did not, in those few cases in which it yielded to the fever, deprive it of the uniformity of its inflammatory character. The following letter from Dr. Griffitts, written soon after his recovery from a third attack of the fever, and just before he went into the country for the re-establishment of his health, will

furnish a striking illustration of the truth of the above observation.

" I cannot leave town without a parting adieu to my kind friend, and sincere prayers for his preservation.

" I am sorry to find that the use of the lancet is still so much dreaded by too many of our physicians; and, while lamenting the death of a valuable friend this morning, I was told that he was bled but *once* during his disease. Now if my poor frame, reduced by previous sickness, great anxiety, and fatigue, and a very low diet, could bear *seven* bleedings in five days, besides purging, and no diet but toast and water, what shall we say of physicians who bleed but once?

" *October* 19*th*, 1793."

I have compared a paroxysm of this fever to a sudden squall; but the disease in its whole course was like a tedious equinoctial gale acting upon a ship at sea; its destructive force was only to be opposed by handing every sail, and leaving the system to float, as it were, under bare poles. Such was the fragility (if I may be allowed the expression) of the blood-vessels, that it was necessary to

unload them of their contents, in order to prevent the system sinking from hæmorrhages, or from effusions in the viscera, particularly the brain.

9. Such was the indomitable nature of the pulse, in some patients, that it did not lose its force after numerous and copious bleedings. In all such cases I considered the diminution of its frequency, and the absence of a vomiting, as signals to lay aside the lancet. The continuance of this preternatural force in the pulse appeared to be owing to the miasmata, which were universally diffused in the air, acting upon the arterial system in the same manner that it did in persons who were in apparent good health.

Thus have I mentioned the principal circumstances which were connected with blood-letting in the cure of the yellow fever. I shall now consider the objections that were made to it at the time, and since the prevalence of the fever.

It was said that the bleeding was unnecessarily copious; and that many had been destroyed by it. To this I answer, that I did not lose a single patient whom I bled seven times or more in this fever. As a further proof that I did not draw an ounce of blood too much it will only be necessary

to add, that hæmorrhages frequently occurred after a third, a fourth, and in one instance (in the only son of Mr. William Hall) after a sixth bleeding had been used; and further, that not a single death occurred from natural hæmorrhages in the first stage of the disease. A woman, who had been bled by my advice, awoke the night following in a bath of her blood, which had flowed from the orifice in her arm. The next day she was free from pain and fever. There were many recoveries in the city from similar accidents. There were likewise some recoveries from copious natural hæmorrhages in the more advanced stages of the disease, particularly when they occurred from the stomach and bowels. I left a servant maid of Mrs. Morris's, in Walnut-street, who had discharged at least four pounds of blood from her stomach, without a pulse, and with scarcely a symptom that encouraged a hope of her life; but the next day I had the pleasure of finding her out of danger.

It was remarked that fainting was much less common after bleeding in this fever than in common inflammatory fevers. This circumstance was observed by Dr. Griffitts, as well as myself. It has since been confirmed to me by three of the principal bleeders in the city, who performed the

operation upwards of four thousand times. It occurred chiefly in those cases where it was used for the first time on the third or fourth day of the disease. A swelling of the legs, moreover, so common after plentiful bleeding in pneumony and rheumatism, rarely succeeded the use of this remedy in the yellow fever.

2. Many of the indispositions, and much of the subsequent weakness of persons who had been cured by copious blood-letting, have been ascribed to it. This is so far from being true that the reverse of it has occurred in many cases. Mr. Mierken worked in his sugar-house, in good health, nine days after his last bleeding; and Mr. Gribble and Mr. George seemed, by their appearance, to have derived fresh vigour from their evacuations. I could mention the names of many people who assured me their constitutions had been improved by the use of those remedies; and I know several persons in whom they have carried off habitual complaints. Mr. Richard Wells attributed his relief from a chronic rheumatism to the copious bleeding and purging which were used to cure him of the yellow fever; and Mr. William Young, the bookseller, was relieved of a chronic pain in his side, by means of the same remedies.

3. It was said, that blood-letting was prescribed indiscriminately in all cases, without any regard to age, constitution, or the force of the disease. This is not true, as far as it relates to my practice. In my prescriptions for patients whom I was unable to visit, I advised them, when they were incapable of judging of the state of the pulse, to be guided in the use of bleeding, by the degrees of pain they felt, particularly in the head; and I seldom advised it for the *first* time, after the second or third day of the disease.

In pneumonies which affect whole neighbourhoods in the spring of the year, bleeding is the universal remedy. Why should it not be equally so, in a fever which is of a more uniform inflammatory nature, and which tends more rapidly to effusions, in parts of the body much more vital than the lungs?

I have before remarked, that the debility which occurs in the beginning of the yellow fever, arises from a depressed state of the system. The debility in the plague is of the same nature. It has long been known that debility from the sudden abstraction of stimuli is to be removed by the *gradual* application of stimuli, but it has been less observed, that the excess of stimulus in the system is best

removed in a *gradual* manner, and that too in proportion to the degrees of depression, which exist in the system.

This principle in the animal economy has been acknowledged by the practice of occasionally stopping the discharge of water from a canula in tapping, and of blood from a vein, in order to prevent fainting.

Child-birth induces fainting, and sometimes death, only by the *sudden* abstraction of the stimulus of distention and pain.

In all those cases where purging or bleeding have produced death in the yellow fever or plague, when they have been used on the first or second day of those diseases, I suspect that it was occasioned by the quantity of the stimulus abstracted being disproportioned to the degrees of depression in the system. The following facts will I hope throw light upon this subject.

1. Dr. Hodges informs us, that "although blood could not be drawn in the plague, even in the smallest quantity without danger, yet a *hun-*

dred times the quantity of fluids was discharged in pus from buboes without inconvenience*."

2. Pareus, after condemning bleeding in the plague, immediately adds an account of a patient, who was saved by a hæmorrhage from the nose, which continued *two* days†.

3. I have before remarked that bleeding proved fatal in three cases in the yellow fever, in the month of August; but at that time I saw one, and heard of another case, in which death seemed to have been prevented by a bleeding at the nose. Perhaps the uniform good effects which were observed to follow a spontaneous hæmorrhage from an orifice in the arm, arose wholly from the *gradual* manner in which the stimulus of the blood was in this way abstracted from the body. Dr. Williams relates a case of the recovery of a gentleman from the yellow fever, by means of small hæmorrhages, which continued three days, from wounds in his shoulders made by being cupped. He likewise mentions several other recoveries by hæmorrhages from the nose, after " a vomit-

* Page 114.

† Skenkius, lib. vi. p. 881.

ing of black humours and a hiccup had taken place*."

4. There is a disease in North-Carolina, known among the common people by the name of the "pleurisy in the head." It occurs in the winter, after a sickly autumn, and seems to be an evanescent symptom of a bilious remitting fever. The cure of it has been attempted by bleeding, in the common way, but generally without success. It has, however, yielded to this remedy in another form, that is, to the discharge of a few ounces of blood obtained by thrusting a piece of quill up the nose.

5. Riverius describes a pestilential fever which prevailed at Montpellier, in the year 1623, which carried off one half of all who were affected by it†. After many unsuccessful attempts to cure it, this judicious physician prescribed the loss of *two* or *three* ounces of blood. The pulse rose with this small evacuation. Three or four hours afterwards he drew six ounces of blood from his patients, and with the same good effect. The next day he gave a purge, which, he says, rescued his

* Essay on the Bilious or Yellow Fever of Jamaica, p. 40.

† De Febre Pestilenti, vol. ii. p. 145, 146, and 147.

patients from the grave. All whom he treated in this manner recovered. The whole history of this epidemic is highly interesting, from its agreeing with our late epidemic in so many of its symptoms, more especially as they appeared in the different states of the pulse.

An old and intelligent citizen of Philadelphia, who remembers the yellow fever of 1741, says that when it first made its appearance bleeding was attended with fatal consequences. It was laid aside afterwards, and the disease prevailed with great mortality until it was checked by the cold weather. Had blood been drawn in the manner mentioned by Riverius, or had it been drawn in the usual way, after the abstraction of the stimulus of heat by the cool weather, the disease might probably have been subdued, and the remedy of blood-letting thereby have recovered its character.

Dr. Hodges has another remark, in his account of the plague in London in the year 1665, which is still more to our purpose than the one which I have quoted from it upon this subject. He says that " bleeding, as a preventive of the plague, was only safe and useful when the blood was drawn by

a *small* orifice, and a *small* quantity taken at *different* times*."

I have remarked, in the history of this fever, that it was often cured on the first or second day by a copious sweat. The Rev. Mr. Ustick was one among many whom I could mention, who were saved from a violent attack of the fever by this evacuation. It would be absurd to suppose that the miasmata which produced the disease were discharged in this manner from the body. The sweat seemed to cure the fever only by lessening the quantity of the fluids, and thus *gradually* removing the depression of the system. The profuse sweats which sometimes cure the plague, as well as the disease which is brought on by the bite of poisonous snakes, seem to act in the same way.

The system, in certain states of malignant fever, resembles a man struggling beneath a load of two hundred weight, who is able to lift but one hundred and seventy-five. In order to assist him it will be to no purpose to attempt to infuse additional vigour into his muscles by the use of a whip or of strong drink. Every exertion will serve only

* Page 209.

to waste his strength. In this situation (supposing it impossible to divide the weight which confines him to the ground) let the pockets of this man be emptied of their contents, and let him be stripped of so much of his clothing as to reduce his weight five and twenty or thirty pounds. In this situation he will rise from the ground; but if the weights be abstracted suddenly, while he is in an act of exertion, he will rise with a spring that will endanger a second fall, and probably produce a temporary convulsion in his system. By abstracting the weights from his body more gradually, he will rise by degrees from the ground, and the system will accommodate itself in such a manner to the diminution of its pressure, as to resume its erect form, without the least deviation from the natural order of its appearance and motions.

It has been said that the stimulating remedies of bark, wine, and the cold bath, were proper in our late epidemic in August, and in the beginning of September, but that they were improper afterwards. If my theory be just, they were more improper in August and the beginning of September, than they were after the disease put on the outward and common signs of inflammatory diathesis. The reason why a few strong purges cured the disease at its first appearance, was, because

they abstracted in a *gradual* manner some of the immense portion of stimulus under which the arterial system laboured, and thus gradually relieved it from its low and weakening degrees of depression. Bleeding was fatal in these cases, probably because it removed this depression in too sudden a manner.

The principle of the gradual abstraction, as well as of the gradual application of stimuli to the body, opens a wide field for the improvement of medicine. Perhaps all the discoveries of future ages will consist more in a new application of established principles, and in new modes of exhibiting old medicines, than in the discovery of new theories, or of new articles of the materia medica.

The reasons which induced me to prescribe purging and bleeding, in so liberal a manner, naturally led me to recommend *cool* and *fresh air* to my patients. The good effects of it were obvious in almost every case in which it was applied. It was equally proper whether the arterial system was depressed, or whether it discovered, in the pulse, a high degree of morbid excitement. Dr. Griffitts furnished a remarkable instance of the influence of cool air upon the fever. Upon my visiting him, on the morning of the 8th of October, I found his pulse so full and tense as to in-

dicate bleeding, but after sitting a few minutes by his bed-side, I perceived that the windows of his room had been shut in the night by his nurse, on account of the coldness of the night air. I desired that they might be opened. In ten minutes afterwards the doctor's pulse became so much slower and weaker that I advised the postponement of the bleeding, and recommended a purge instead of it. The bleeding notwithstanding became necessary, and was used with great advantage in the afternoon of the same day.

The cool air was improper only in those cases where a chilliness attended the disease.

For the same reason that I advised cool air, I directed my patients to use cold *drinks*. They consisted of lemonade, tamarind, jelly and raw apple water, toast and water, and of weak balm, and camomile tea. The subacid drinks were preferred in most cases, as being not only most agreeable to the taste, but because they tended to compose the stomach. All these drinks were taken in the early stage of the disease. Towards the close of it, I permitted the use of porter and water, weak punch, and when the stomach would bear it, weak wine-whey.

I forbade all cordial and stimulating food in the active state of the arterial system. The less my patients ate, of even the mildest vegetable food, the sooner they recovered. Weak coffee, which (as I have formerly remarked) was almost universally agreeable, and weak tea were always inoffensive. As the action of the pulse diminished, I indulged my patients with weak chocolate; also with milk, to which roasted apples, or minced peaches, and (where they were not to be had), bread or Indian mush were added.

Towards the crisis, I advised the drinking of weak chicken, veal, or mutton broth, and after the crisis had taken place, I permitted mild animal food to be eaten in a small quantity, and to be increased according to the waste of the excitability of the system. This strict abstinence which I imposed upon my patients did not escape obloquy; but the benefits they derived from it, and the ill effects which arose in many cases from a contrary regimen, satisfied me that it was proper in every case in which it was prescribed.

Cold water was a most agreeable and powerful remedy in this disease. I directed it to be applied by means of napkins to the head, and to be injected into the bowels by way of glyster. It gave the

same ease to both, when in pain, which opium gives to pain from other causes. I likewise advised the washing of the face and hands, and sometimes the feet, with cold water, and always with advantage. It was by suffering the body to lie for some time in a bed of cold water, that the inhabitants of the island of Massuah cured the most violent bilious fevers*. When applied in this way, it *gradually* abstracts the heat from the body, and thereby lessens the action of the system. It differs as much in its effects upon the body from the cold bath, as rest in a cold room, differs from exercise in the cold and open air.

I was first led to the practice of the partial application of cold water to the body, in fevers of too much force in the arterial system, by observing its good effects in active hæmorrhages, and by recollecting the effects of a partial application of warm water to the feet, in fevers of an opposite character. Cold water when applied to the feet as certainly reduces the pulse in force and frequency, as warm water, applied in the same way, produces contrary effects upon it. In an experiment which was made at my request, by one of my pupils, by placing his feet in cold pump water for

* Bruce's Travels.

a few minutes, the pulse was reduced 24 strokes in a minute, and became so small as hardly to be perceptible.

But this effect of cold water, in reducing the frequency of the pulse, is not uniform. In weak and irritable habits, it increases its frequency. This has been fully proved by a number of experiments, made by my former pupil, Dr. Stock, of Bristol, in England, and published in his "Medical Collections of the Effects of Cold, as a Remedy in certain Diseases*."

In the use of the remedies which were necessary to overcome the inflammatory action of the system, I was obliged to reduce it below its natural point of excitement. In the present imperfect state of our knowledge in medicine, perhaps no disease of too much action can be cured without it.

Besides the remedies which have been mentioned, I was led to employ another of great efficacy. I had observed a favourable issue of the fever, in every case in which a spontaneous discharge took place from the salivary glands. I had observed further, that all such of my patients (one

* Page 185.

excepted) as were salivated by the mercurial purges recovered in a few days. This early suggested an idea to me that the calomel might be applied to other purposes than the discharging of bile from the bowels. I ascribed its salutary effects, when it salivated in the first stage of the disease, to the excitement of inflammation and effusion in the throat, diverting them from more vital parts of the body. In the second stage of the disease, I was led to prescribe it as a stimulant, and, with a view of obtaining this operation from it, I aimed at exciting a salivation, as speedily as possible, in all cases. Two precedents encouraged me to make trial of this remedy.

In the month of October, 1789, I attended a gentleman in a bilious fever, which ended in many of the symptoms of a typhus mitior. In the lowest state of his fever, he complained of a pain in his right side, for which I ordered half an ounce of mercurial ointment to be rubbed on the part affected. The next day, he complained of a sore mouth, and, in the course of four and twenty hours, he was in a moderate salivation. From this time his pulse became full and slow, and his skin moist; his sleep and appetite suddenly returned, and in a day or two he was out of danger. The second precedent for a salivation in a fever, which occurred

to me, was in Dr. Haller's short account of the works of Dr. Cramer*. The practice was moreover justified, in point of safety, as well as the probability of success, by the accounts which Dr. Clark has lately given of the effects of a salivation in the dysentery†. I began by prescribing the calomel in small doses, at short intervals, and afterwards I directed large quantities of the ointment to be rubbed upon the limbs. The effects of it, in every case in which it affected the mouth, were salutary. Dr. Woodhouse improved upon my method of exciting the salivation, by rubbing the gums with calomel, in the manner directed by Mr. Clare. It was more speedy in its operation in this way than in any other, and equally effectual. Several persons appeared to be benefited by the mercury introduced into the system in the form of an ointment, where it did *not* produce a salivation. Among these, were the Rev. Dr. Blackwell, and Mr. John Davis.

Soon after the above account was written of the good effects of a mercurial salivation in this fever, I had great satisfaction in discovering that it had

* Bibliotheca Medicinæ Practicæ, vol. iii. p. 491.

† Diseases of Long Voyages to Hot Climates, vol. ii. p. 334.

been prescribed with equal, and even greater success, by Dr. Wade in Bengal, in the year 1791, and by Dr. Chisholm in the island of Granada, in the cure of bilious yellow fevers*. Dr. Wade did not lose one, and Dr. Chisholm lost only one out of forty-eight patients in whom the mercury affected the salivary glands. The latter gave 150 grains of calomel, and applied the strongest mercurial ointment below the groin of each side, in some cases. He adds further, that not a single instance of a relapse occurred, where the disease was cured by salivation.

After the reduction of the system, *blisters* were applied with great advantage to every part of the body. They did most service when they were applied to the crown of the head. I did not see a single case, in which a mortification followed the sore, which was created by a blister.

Brandy and water, or porter and water, when agreeable to the stomach, with now and then a cup of chicken broth, were the drinks I prescribed to assist in restoring the tone of the system.

* Medical Commentaries, vol. xviii. p. 209, 288.

In some cases I directed the limbs to be wrapped in flannels dipped in warm spirits, and cataplasms of bruised garlic to be applied to the feet. But my principal dependence, next to the use of mercurial medicines, for exciting a healthy action in the arterial system, was upon mild and gently stimulating food. This consisted of rich broths, the flesh of poultry, oysters, thick gruel, mush and milk, and chocolate. I directed my patients to eat or drink a portion of some of the above articles of diet every hour or two during the day, and in cases of great debility, from an exhausted state of the system, I advised their being waked for the same purpose two or three times in the night. The appetite frequently craved more savoury articles of food, such as beef-stakes and sausages; but they were permitted with great caution, and never till the system had been prepared for them by a less stimulating diet.

There were several *symptoms* which were very distressing in this disease, and which required a specific treatment.

For the vomiting, with a burning sensation in the stomach, which came on about the fifth day, I found no remedy equal to a table spoonful of sweet milk, taken every hour, or to small draughts

of milk and water. I was led to prescribe this simple medicine from having heard, from a West-India practitioner, and afterwards read, in Dr. Hume's account of the yellow fever, encomiums upon the milk of the cocoa-nut for this troublesome symptom. Where sweet milk failed of giving relief, I prescribed small doses of sweet oil, and in some cases a mixture of equal parts of milk, sweet oil, and molasses. They were all intended to dilute or blunt the acrimony of the humours, which were either effused or generated in the stomach. Where they all failed of checking the vomiting, I prescribed weak camomile tea, or porter, or cyder and water, with advantage. In some of my patients the stomach rejected all the mixtures and liquors which have been mentioned. In such cases I directed the stomach to be left to itself for a few hours, after which it sometimes received and retained the drinks that it had before rejected, provided they were administered in a small quantity at a time.

The vomiting was sometimes stopped by a blister applied to the external region of the stomach.

A mixture of liquid laudanum and sweet oil, applied to the same place, gave relief where the

stomach was affected by pain only, without a vomiting.

I have formerly mentioned that a distressing *pain* often seized the lower part of the *bowels*. I was early taught that laudanum was not a proper remedy for it. It yielded in almost every case to two or three emollient glysters, or to the loss of a few ounces of blood.

The convalescence from this fever was in general rapid, but in some cases it was very slow. I was more than usually struck by the great resemblance which the system in the convalescence from this fever bore to the state of the body and mind in old age. It appeared, 1. In the great weakness of the body, more especially of the limbs. 2. In uncommon depression of mind, and in a great aptitude to shed tears. 3. In the absence or short continuance of sleep. 4. In the frequent occurrence of appetite, and, in some cases, in its inordinate degrees. And 5. In the loss of the hair of the head, or in its being suddenly changed in some cases to a grey colour.

Pure air, gentle exercise, and agreeable society removed the debility both of body and mind of this premature and temporary old age. I met with a

few cases, in which the yellow colour continued for several weeks after the patient's recovery from all the other symptoms of the fever. It was removed most speedily and effectually by two or three moderate doses of calomel and rhubarb.

A feeble and irregular intermittent was very troublesome in some people, after an acute attack of the fever. It yielded gradually to camomile or snake-root tea, and country air.

In a publication, dated the 16th of September, I recommended a diet of milk and vegetables, and cooling purges to be taken once or twice a week, to the citizens of Philadelphia. This advice was the result of the theory of the disease I had adopted, and of the successful practice which had arisen from it. In my intercourse with my fellow-citizens, I advised this regimen to be regulated by the degrees of fatigue and foul air to which they were exposed. I likewise advised moderate bloodletting to all such persons as were of a plethoric habit. To men whose minds were influenced by the publications in favour of bark and wine, and who were unable at that time to grasp the extent and force of the remote cause of this terrible fever, the idea of dieting, purging, or bleeding the inhabitants of a whole village or city appeared to be

extravagant and absurd: but I had not only the analogy of the regimen made use of to prepare the body for the small-pox, but many precedents in favour of the advice. Dr. Haller has given extracts from the histories of two plagues, in which the action of the miasmata was prevented or mitigated by bleeding*. Dr. Hodges confirms the utility of the same practice. The benefits of low diet, as a preventive of the plague, were established by many authors, long before they received the testimony of the benevolent Mr. Howard in their favour. Socrates in Athens, and Justinian in Constantinople, were preserved, by means of their abstemious modes of living, from the plagues which occasionally ravaged those cities. By means of the low diet, gentle physic, and occasional bleedings, which I thus publicly recommended, the disease was prevented in many instances, or rendered mild where it was taken. But my efforts to prevent the disease in my fellow-citizens did not end here. I advised them, not only in the public papers, but in my intercourse with them, to avoid heat, cold, labour, and every thing else that could excite the miasmata (which I knew to be present in all their bodies) into action. I forgot, upon this occasion, the usual laws which regulate the intercourse of man with

* Bibliotheca Medicinæ Practicæ, vol. ii. p. 93. and 387.

man in the streets, and upon the public roads, in my excursions into the neighbourhood of the city. I cautioned many persons, whom I saw walking or riding in an unsafe manner, of the danger to which they exposed themselves; and thereby, I hope, prevented an attack of the disease in many people.

It was from a conviction of the utility of low diet, gentle evacuations, and of carefully shunning all the exciting causes which I have mentioned, that I concealed, in no instance, from my patients the name of their disease. This plainness, which was blamed by weak people, produced strict obedience to my directions, and thereby restrained the progress of the fever in many families, or rendered it, when taken, as mild as inoculation does the small-pox. The opposite conduct of several physicians, by preventing the above precautions, increased the mortality of the disease, and, in some instances, contributed to the extinction of whole families.

I proceed now to make a few remarks upon the remedies recommended by Doctors Kuhn and Stevens, and by the French physicians. The former were bark, wine, laudanum, spices, the elixir of vitriol, and the cold bath.

In every case in which I prescribed bark, it was offensive to the stomach. In several tertians which attended the convalescence from a common attack of the fever, I found it always unsuccessful, and once hurtful. Mr. Willing took it for several weeks without effect. About half a pint of a weak decoction of the bark produced, in Mr. Samuel Meredith, a paroxysm of the fever, so violent as to require the loss of ten ounces of blood to moderate it. Dr. Annan informed me that he was forced to bleed one of his patients twice, after having given him a small quantity of bark, to hasten his convalescence.

It was not in this epidemic only that the bark was hurtful. Baron Humboldt informed me, that Dr. Comoto had assured him, it hastened death in every case in which it was given in the yellow fever of Vera Cruz. If, in any instance, it was inoffensive, or did service, in our fever, I suspect it must have acted upon the bowels as a purge. Dr. Sydenham says the bark cured intermittents by this evacuation*; and Mr. Bruce says it operated in the same way, when it cured the bilious fevers at Massuah.

* Vol. i. p. 440.

Wine was nearly as disagreeable as the bark to the stomach, and equally hurtful. I tried it in every form, and of every quality, but without success. It was either rejected by the stomach, or produced in it a burning sensation. I should suspect that I had been mistaken in my complaints against wine, had I not since met with an account in Skenkius of its having destroyed all who took it in the famous Hungarian fever, which prevailed, with great mortality, over nearly every country in Europe, about the middle of the 16th century*. Dr. Wade declares wine to be "ill adapted to the fevers of Bengal, where the treatment has been proper in other respects."

Laudanum has been called by Dr. Mosely "a fatal medicine" in the yellow fever. In one of my patients, who took only fifteen drops of it, without my advice, to ease a pain in his bowels, it produced a delirium, and death in a few hours. I was much gratified in discovering that my practice, with respect to the use of opium in this fever, accorded with Dr. Wade's in the fever of Bengal. He tells us, "that it was mischievous in

* Omnes qui vini potione non abstinuerunt, interiere, adeo ut summa spes salvationis in vini abstinentia collocata videreter. Lib. vi. p. 847.

almost every instance, even in combination with antimonials."

The *spices* were hurtful in the first stage of the fever, and, when sufficient evacuations had been used, they were seldom necessary in its second.

The *elixir of vitriol* was, in general, offensive to the stomach.

The *cold bath* was useful in those cases where its sedative prevailed over its stimulating effects. But this could not often happen, from the suddenness and force, with which the water was thrown upon the body. In two cases in which I prescribed it, it produced a gentle sweat, but it did not save life. In a third it removed a delirium, and reduced the pulse for a few minutes, in frequency and force, but this patient died. The recommendation of it indiscriminately, in all cases, was extremely improper. In that chilliness and tendency to fainting upon the least motion, which attended the disease in some patients, it was an unsafe remedy. I heard of a woman who was seized with delirium immediately after using it, from which she never recovered; and of a man who died a few minutes after he came out of a bathing tub. Had this remedy been the exclusive antidote to the yellow

fever, the mortality of the disease would have been but little checked by it. Thousands must have perished from the want of means to procure tubs, and of a suitable number of attendants to apply the water, and to lift the patient in and out of bed. The reason of our citizens ran before the learning of the friends of this remedy, and long before it was abandoned by the physicians, it was rejected as useless, or not attempted, because impracticable, by the good sense of the city. It is to be lamented that the remedy of cold water has suffered in its character by the manner in which it was advised. In fevers of too much action, it reduces the morbid excitement of the blood-vessels, provided it be *applied without force*, and for a considerable time, to the body. It is in the jail fever, and in the second stage of the yellow fever only, in which its stimulant and tonic powers are proper. Dr. Jackson establishes this mode of using it, by informing us, that when it did service, it "gave vigour and tone" to the system*.

A mode of practice which I formerly mentioned in this fever, consisted of a union of the evacuating and tonic remedies. The physicians who adopted this mode gave calomel by itself, in small doses, on

* Fevers of Jamaica.

the first or second day of the fever, bled once or twice, in a sparing manner, and gave the bark, wine, and laudanum, in large quantities, upon the first appearance of a remission. After they began the use of these remedies purging was omitted, or, if the bowels were moved, it was only by means of gentle glysters. This practice, I shall say hereafter, was not much more successful than that which was recommended by Dr. Kuhn and Dr. Stevens. It resembled throwing water and oil at the same time upon a fire, in order to extinguish it.

The *French* remedies were nitre and cremor tartar, in small doses, centuary tea, camphor, and several other warm medicines; subacid drinks, taken in large quantities, the warm bath, and moderate bleeding.

After what has been said it must obvious to the reader, that the nitre and cremor tartar, in small doses, could do no good, and that camphor and all cordial medicines must have done harm. The diluting subacid drinks, which the French physicians gave in large quantities, were useful in diluting and blunting the acrimony of the bile, and to this remedy, assisted by occasional bleeding, I as-

cribe most of the cures which were performed by those physicians.

Those few persons in whom the *warm bath* produced copious and universal sweats recovered, but, in nearly all the cases which came under my notice, it did harm.

I come now to inquire into the comparative success of all the different modes of practice which have been mentioned.

I have already said that ten out of thirteen patients whom I treated with bark, wine, and laudanum, and that three out of four, in whom I added the cold bath to those remedies, died. Dr. Pennington informed me, that he had lost all the patients (six in number) to whom he had given the above medicines. Dr. Johnson assured me, with great concern, about two weeks before he died, that he had not recovered a single patient by them. Whole families were swept off where these medicines were used. But further, most of those persons who received the seeds of the fever in the city, and sickened in the country, or in the neighbouring towns, and who were treated with tonic remedies, died. There was not a single cure per-

formed by them in New-York, where they were used in several sporadic cases with every possible advantage. But why do I multiply proofs of their deadly effects? The clamours of hundreds whose relations had perished by them, and the fears of others, compelled those physicians who had been most attached to them to lay them aside, or to prepare the way for them (as it was called) by purging and bleeding. The bathing tub soon shared a worse fate than bark, wine, and laudanum, and, long before the disease disappeared, it was discarded by all the physicians in the city.

In answer to these facts we are told, that Mr. Hamilton and his family were cured by Dr. Stevens's remedies, and that Dr. Kuhn had administered them with success in several instances.

Upon these cures I shall insert the following judicious remarks from Dr. Sydenham. "Success (says the doctor) is not a sufficient proof of the excellency of a method of cure in acute diseases, since some are recovered by the imprudent procedure of old women; but it is further required, that the distemper should be *easily cured*, and yield conformably to its *own* nature*." And again, speak-

* Vol. ii. p. 254.

ing of the cure of the new fever of 1685, this incomparable physician observes, " If it be objected that this fever frequently yields to a quite contrary method to that which I have laid down, I answer, that the cure of a disease by a method which is attended with success only *now* and *then*, in a *few* instances, differs extremely from that practical method, the efficacy whereof appears both from its recovering *greater numbers*, and all the practical phenomena happening in the cure*."

Far be it from me to deny that the depression of the system may not be overcome by such stimuli as are more powerful than those which occasion it. This has sometimes been demonstrated by the efficacy of bark, wine, and laudanum, in the confluent and petechial small-pox; but even this state of that disease yields more easily to blood-letting, or to plentiful evacuations from the stomach and bowels, on the first or second day of the eruptive fever. This I have often proved, by giving a large dose of tartar emetic and calomel, as soon as I was satisfied from circumstances, that my patient was infected with the small-pox. But the depression produced by the yellow fever appears to be much greater than that which occurs in the small-

* Vol. ii. p. 354.

pox, and hence it more uniformly resisted the most powerful tonic remedies.

In one of my publications during the prevalence of the fever I asserted, that the remedies of which I have given a history cured a greater proportion than ninety-nine out of a hundred, of all who applied to me on the first day of the disease, before the 15th day of September. I regret that it is not in my power to furnish a list of them, for a majority of them were poor people, whose names are still unknown to me. I was not singular in this successful practice in the first appearance of the disease. Dr. Pennington assured me on his death bed, that he had not lost one, out of forty-eight patients whom he had treated agreeably to the principles and practice I had recommended. Dr. Griffitts triumphed over the disease in every part of the city, by the use of what were called the new remedies. My former pupils spread, by their success, the reputation of purging and bleeding, wherever they were called. Unhappily the pleasure we derived from this success in the treatment of the disease, was of short duration. Many circumstances contributed to lessen it, and to revive the mortality of the fever. I shall briefly enumerate them.

1. The distraction produced in the public mind, by the recommendation of remedies, the opposites in every respect of purging and bleeding.

2. The opinion which had been published by several physicians, and inculcated by others, that we had other fevers in the city besides the yellow fever. This produced a delay in many people in sending for a physician, or in taking medicines, for two or three days, from a belief that they had nothing but a cold, or a common fever. Some people were so much deceived by this opinion, that they refused to send for physicians, lest they should be infected by them with the yellow fever. In most of the cases in which these delays took place, the disease proved mortal.

To obviate a suspicion that I have laid more stress upon the fatal influence of this error than is just, I shall here insert an extract of a letter I received from Mr. John Connelly, one of the city committee, who frequently left his brethren in the city hall, and spent many hours in visiting and prescribing for the sick. "The publications (says he) of some physicians, that there were but few persons infected with the yellow fever, and that many were ill with colds and common remitting

and fall fevers, proved fatal to almost every family which was credulous enough to believe them. That opinion slew its hundreds, if not its thousands, many of whom did not send for a physician until they were in the last stage of the disorder, and beyond the power of medicine."

3. The interference of the friends of the stimulating system, in dissuading patients from submitting to sufficient evacuations.

4. The deceptions which were practised by some patients upon their physicians, in their reports of the quantity of blood they had lost, or of the quality and number of their evacuations by stool.

5. The impracticability of procuring bleeders as soon as bleeding was prescribed. Life in this disease, as in the apoplexy, frequently turned upon that operation being performed within an *hour*. It was often delayed, from the want of a bleeder, one or two days.

6. The inability of physicians, from the number of their patients, and from frequent indisposition, to visit the sick, at such times as was necessary to watch the changes in their disease.

7. The great accumulation and concentration of the miasmata in sick rooms, from the continuance of the disease in the city, whereby the system was exposed to a constant stimulus, and the effect of the evacuations was thus defeated.

8. The want of skill or fidelity in nurses to administer the medicines properly; to persuade patients to drink frequently; also to supply them with food or cordial drinks when required in the night.

9. The great degrees of debility induced in the systems of many of the people who were affected by the disease, from fatigue in attending their relations or friends.

10. The universal depression of mind, amounting in some instances to despair, which affected many people. What medicine could act upon a patient who awoke in the night, and saw through the broken and faint light of a candle, no human creature, but a black nurse, perhaps asleep in a distant corner of the room; and who heard no noise, but that of a hearse conveying, perhaps, a neighbour or a friend to the grave? The state of mind under which many were affected by the disease, is so well described by the Rev. Dr. Smith, in the

case of his wife, in a letter I received from him in my sick room, two days after her death, that I hope I shall be excused for inserting an extract from it. It forms a part of the history of the disease. The letter was written in answer to a short note of condolence which I sent to the doctor immediately after hearing of Mrs. Smith's death. After some pathetic expressions of grief, he adds, " The scene of her funeral, and some preceding circumstances, can never depart from my mind. On our return from a visit to our daughter, whom we had been striving to console on the death of Mrs. Keppele, who was long familiar and dear to both, my dear wife, passing the burying-ground gate, led me into the ground, viewed the graves of her two children, called the old grave-digger, marked a spot for herself as close as possible to them and the grave of Dr. Phineas Bond, whose memory she adored. Then, by the side of the spot she had chosen, we found room and chose *mine*, pledging ourselves to each other, and directing the grave-digger that this should be the order of our interment. We returned to our house. Night approached. I hoped my dear wife had gone to rest, as she had chosen, since her return from nursing her daughter, to sleep in a chamber by herself, through fear of infecting her grandchild and me. But it seems she closed not her eyes; sitting with them fixed through

her chamber window on Mrs. Keppele's house, till about midnight she saw her hearse, and followed it with her eyes as far as it could be seen. Two days afterwards Mrs. Rodgers, her next only surviving intimate friend, was carried past her window, and by no persuasion could I draw her from thence, nor stop her sympathetic foreboding tears, so long as her eyes could follow the funeral, which was through two squares, from Fourth to Second-street, where the hearse disappeared." The doctor proceeds in describing the distress of his wife. But pointed as his expressions are, they do not convey the gloomy state of her mind with so much force as she has done it herself in two letters to her niece, Mrs. Cadwallader, who was then in the country. The one was dated the 9th, the other the 11th of October. I shall insert a few extracts from each of them.

October 9th. "It is not possible for me to pass the streets without walking in a line with the dead, passing infected houses, and looking into open graves. This has been the case for many weeks." "I don't know what to write; my head is gone, and my heart is torn to pieces." "I intreat you to have no fears on my account. I am in the hands of a just and merciful God, and his will be done."

October 11th. "Don't wonder that I am so low to-day. My heart is sunk down within me."

The next day this excellent woman sickened, and died on the 19th of the same month.

If in a person possessed naturally of uncommon equanimity and fortitude, the distresses of our city produced such dejection of spirits, what must have been their effect upon hundreds, who were not endowed with those rare and extraordinary qualities of mind! Death in this, as well as in many other cases in which medicine had done its duty, appeared to be the inevitable consequence of the total abstraction of the energy of the mind in restoring the natural motions of life.

Under all the circumstances which have been mentioned, which opposed the system of depletion in the cure of this fever, it was still far more successful than any other mode of cure that had been pursued before in the United States, or in the West-Indies.

Three out of four died of the disease in Jamaica, under the care of Dr. Hume.

Dr. Blane considers it as one of the " most mortal" of diseases, and Dr. Jackson places a more successful mode of treating it among the subjects which will admit of " innovation" in medicine.

After the 15th of September, my success was much limited, compared with what it had been before that time. But at no period of the disease did I lose more than one in twenty of those whom I saw on the first day, and attended regularly through every stage of the fever, provided they had not been previously worn down by attending the sick.

The following statement, which will admit of being corrected, if it be inaccurate, will, I hope, establish the truth of the above assertions.

About one half of the families whom I have attended for many years, left the city. Of those who remained, many were affected by the disease. Out of the whole of them, after I had adopted my second mode of practice, I lost but five heads of families, and about a dozen servants and children. In no instance did I lose both heads of the same family. My success in these cases was owing to two causes: 1st, To the credit my former patients

gave to my public declaration, that we had only *one* fever in the city: hence they applied on the *first* day, and sometimes on the *first* hour of their indisposition; and 2dly, To the numerous pledges many of them had seen of the safety and efficacy of copious blood-letting, by my advice, in other diseases: hence my prescription of that necessary remedy was always obeyed in its utmost extent. Of the few adults whom I lost, among my former patients, two of them were old people, two took laudanum, without my knowledge, and one refused to take medicine of any kind; all the rest had been worn down by previous fatigue.

I have before said that a great number of the blacks were my patients. Of these not one died under my care. This uniform success, among those people, was not owing altogether to the mildness of the disease, for I shall say presently, that a great proportion of a given number died, under other modes of practice.

In speaking of the comparative effects of purging and bleeding, it may not be amiss to repeat, that not one pregnant woman, to whom I prescribed them, died, or suffered abortion. Where the tonic remedies were used, abortion or death, and, in many instances, both, were nearly universal.

Many whole families, consisting of five, six, and, in three instances, of nine members, were recovered by plentiful purging and bleeding. I could swell this work by publishing a list of those families; but I take more pleasure in adding, that I was not singular in my success in the use of the above remedies. They were prescribed with great advantage by many of the physicians of the city, who had for a while given tonic medicines without effect. I shall not mention the names of any of the physicians who *totally* renounced those medicines, lest I should give offence by not mentioning them all. Many large families were cured by some of them, after they adopted and prescribed copious purging and blood-letting. One of them cured ten in the family of Mr. Robert Haydock, by means of those remedies. In one of that family, the disease came on with a vomiting of black bile.

But the use of the new remedies was not directed finally by the physicians alone. The clergy, the apothecaries, many private citizens, several intelligent women, and two black men, prescribed them with great success. Nay more, many persons prescribed them to themselves, and, as I shall say hereafter, with a success that was unequalled by any of the regular or irregular practitioners in the city.

It was owing to the almost universal use of purging and bleeding, that the mortality of the disease diminished, in proportion as the number of persons who were affected by it increased, about the middle of October. It was scarcely double of what it was in the middle of September, and yet six times the number of persons were probably at that time confined by it.

The success of copious purging and bleeding was not confined to the city of Philadelphia. Several persons, who were infected in town, and sickened in the country, were cured by them.

Could a comparison be made of the number of patients who died of the yellow fever in 1793, after having been plentifully bled and purged, with those who died of the same disease in the years 1699, 1741, 1747, and 1762, I am persuaded that the proportion would be very small in the year 1793, compared with the former years*. Including all who died under every mode of treatment, I sus-

* It appears from one of Mr. Norris's letters, dated the 9th of November, O. S. that there died 220 persons, in the year 1099, with the yellow fever. Between 80 and 90 of them, he says, belonged to the society of friends. The city, at this time, probably, did not contain more than 2 or 3000 people, many of whom, it is probable, fled from the disease.

pect the mortality to be less, in proportion to the population of the city, and the number of persons who were affected, than it was in any of the other years that have been mentioned.

Not less than 6000 of the inhabitants of Philadelphia probably owe their lives to purging and bleeding, during the autumn.

I proceed with reluctance to inquire into the comparative success of the French practice. It would not be difficult to decide upon it from many facts that came under my notice in the city; but I shall rest its merit wholly upon the returns of the number of deaths at Bush-hill. This hospital, after the 22d of September, was put under the care of a French physician, who was assisted by one of the physicians of the city. The hospital was in a pleasant and airy situation; it was provided with all the necessaries and comforts for sick people that humanity could invent, or liberality supply. The attendants were devoted to their duty; and cleanliness and order pervaded every room in the house. The reputation of this hospital, and of the French physician, drew patients to it in the early stage of the disease. Of this I have been assured in a letter from Dr. Annan, who was appointed to examine and give orders of admission

into the hospital, to such of the poor of the district of Southwark, as could not be taken care of in their own houses. Mr. Olden has likewise informed me, that most of the patients who were sent to the hospital by the city committee (of which he was a member) were in the first stage of the fever. With all these advantages, the deaths between the 22d of September and the 6th of November, amounted to 448 out of 807 patients who were admitted into the hospital within that time. Three fourths of all the blacks (nearly 20) who were patients in this hospital died. A list of the medicines prescribed there may be seen in the minutes of the proceedings of the city committee. Calomel and jalap are not among them. *Moderate* bleeding and purging with glauber's salts, I have been informed, were used in some cases by the physicians of this hospital. The proportion of deaths to the recoveries, as it appears in the minutes of the committee from whence the above report is taken, is truly melancholy! I hasten from it therefore to a part of this work, to which I have looked with pleasure, ever since I sat down to compose it.

I have said that the clergy, the apothecaries, and many other persons who were uninstructed in the principles of medicine, prescribed purging and bleeding with great success in this disease. Ne-

cessity gave rise to this undisciplined sect of practitioners, for they came forward to supply the places of the regular bred physicians who were sick or dead. I shall mention the names of a few of those persons who distinguished themselves as volunteers in this new work of humanity. The late Rev. Mr. Fleming, one of the ministers of the catholic church, carried the purging powders in his pocket, and gave them to his poor parishioners with great success. He even became the advocate of the new remedies. In a conversation I had with him, on the 22d of September, he informed me, that he had advised four of our physicians, whom he met a day or two before, "to renounce the pride of science, and to adopt the new mode of practice, for that he had witnessed its good effects in many cases." Mr. John Keihmle, a German apothecary, has assured me, that out of 314 patients whom he visited, and 187 for whom he prescribed from the reports of their friends, he lost but 47 (which is nearly but one in eleven), and that he treated them all agreeably to the method which I had recommended. The Rev. Mr. Schmidt, one of the ministers of the Lutheran church, was cured by him. I have before mentioned an instance of the judgment of Mr. Connelly, and of his zeal in visiting and prescribing for the sick. His remedies were bleeding and purging. He, moreover, bore a con-

stant and useful testimony against bark, wine, laudanum, and the warm bath*. Mrs. Paxton, in Carter's-alley, and Mrs. Evans, the wife of Mr. John Evans, in Second-street, were indefatigable; the one in distributing mercurial purges composed by herself, and the other in urging the necessity of *copious* bleeding and purging among her friends and neighbours, as the only safe remedies for the fever. These worthy women were the means of saving many lives†. Absalom Jones and Richard

* In the letter before quoted, from Mr. Connelly, he expresses his opinion of those four medicines in the following words: "Laudanum, bark, and wine have put a period to the existence of some, where the fever has been apparently broken, and the patients in a fair way of recovery; a single dose of laudanum has hurried them suddenly into eternity. I have visited a few patients where the hot bath was used, and am convinced that it only tended to weaken and relax the system, without producing any good effect."

† The yellow fever prevailed at the Caraccos, in South-America, in October, 1793, with great mortality, more especially among the Spanish troops. Nearly all died who were attended by physicians. Recourse was finally had to the old women, who were successful in almost every case to which they were called. Their remedies were a liquor called *narencado* (a species of lemonade) and a tea made of a root called *fistula*. With these drinks they drenched their patients for the first two or three days. They induced plentiful sweats, and, probably, after blunting, discharged the

Allen, two black men, spent all the intervals of time, in which they were not employed in burying the dead, in visiting the poor who were sick, and in bleeding and purging them, agreeably to the directions which had been printed in all the newspapers. Their success was unparalleled by what is called regular practice. This encomium upon the practice of the blacks will not surprise the reader, when I add that they had no fear of putrefaction in the fluids, nor of the calumnies of a body of fellow-citizens in the republic of medicine to deter them from plentiful purging and bleeding. They had, besides, no more patients than they were able to visit two or three times a day. But great as their success was, it was exceeded by those persons who, in despair of procuring medical aid of any kind, purged and bled themselves. This palm of superior success will not be withheld from those people when I explain the causes of it. It was owing to their *early* use of the proper remedies, and to their being guided in the repetition of them, by the continuance of a tense pulse, or of pain and fever. A day, an afternoon, and even an hour, were not lost by these people in waiting for the visit of a physician, who was often detained

bile from the bowels. I received this information from an American gentleman, who had been cured, by one of those Amazons in medicine, in the above way.

from them by sickness, or by new and unexpected engagements, by which means the precious moment for using the remedies with effect passed irrevocably away. I have stated these facts from faithful inquiries, and numerous observations. I could mention the names and families of many persons who thus cured themselves. One person only shall be mentioned, who has shown by her conduct what reason is capable of doing when it is forced to act for itself. Mrs. Long, a widow, after having been twice unsuccessful in her attempts to procure a physician, undertook at last to cure herself. She took several of the mercurial purges, agreeably to the printed directions, and had herself bled *seven* times in the course of five or six days. The indication for repeating the bleeding was the continuance of the pain in her head. Her recovery was rapid and complete. The history of it was communicated to me by herself, with great gratitude, in my own house, during my second confinement with the fever. To these accounts of persons who cured themselves in the city, I could add many others, of citizens who sickened in the country, and who cured themselves by plentiful bleeding and purging, without the attendance of a physician.

From a short review of these facts, reason and humanity awake from their long repose in medi-

cine, and unite in proclaiming, that it is time to take the cure of pestilential epidemics out of the hands of physicians, and to place it in the hands of the people. Let not the reader startle at this proposition. I shall give the following reasons for it.

1. In consequence of these diseases affecting a great number of people at one time, it has always been, and always will be impossible, for them *all* to have the benefit of medical aid, more especially as the proportion of physicians to the number of sick, is generally diminished upon these occasions, by desertion, sickness, and death.

2. The safety of committing to the people the cure of pestilential fevers, particularly the yellow fever and the plague, is established by the simplicity and uniformity of their causes, and of their remedies. However diversified they may be in their symptoms, the system, in both diseases, is generally under a state of undue excitement or great depression, and in most cases requires the abstraction of stimulus in a greater or less degree, or in a sudden or gradual manner. There can never be any danger of the people injuring themselves by mistaking any other disease for an *epidemic* yellow fever or plague, for no other febrile disease can prevail with them. It was probably to pre-

vent this mistake, that the Benevolent Father of mankind, who has permitted no evil to exist which does not carry its antidote along with it, originally imposed that law upon all great and mortal epidemics.

3. The history of the yellow fever in the West-Indies proves the advantage of trusting patients to their own judgment. Dr. Lind has remarked, that a greater proportion of sailors who had no physicians recovered from that fever, than of those who had the best medical assistance. The fresh air of the deck of a ship, a purge of salt water, and the free use of cold water, probably triumphed here over the cordial juleps of physicians.

4. By committing the cure of this and other pestilential epidemics to the people, all those circumstances which prevented the universal success of purging and bleeding, in this disease, will have no operation. The fever will be mild in most cases, for all will prepare themselves to receive it, by a vegetable diet, and by moderate evacuations. The remedies will be used the *moment* the disease is felt, or even seen, and its violence and danger will thereby be obviated. There will then be no disputes among physicians, about the nature of the disease, to distract the pub-

lic mind, for they will seldom be consulted in it. None will suffer from chronic debility induced by previous fatigue in attending the sick, nor from the want of nurses, for few will be so ill as to require them, and there will be no "foreboding" fears of death, or despair of recovery, to invite an attack of the disease, or to ensure its mortality.

The small-pox was once as fatal as the yellow fever and the plague. It has since yielded as universally to a vegetable diet and evacuations, in the hands of apothecaries, the clergy, and even of the good women, as it did in the hands of doctors of physic.

They have narrow conceptions, not only of the Divine goodness, but of the gradual progress of human knowledge, who suppose that all pestilential diseases shall not, like the small-pox, sooner or later cease to be the scourge and terror of mankind.

For a long while, air, water, and even the light of the sun, were dealt out by physicians to their patients with a sparing hand. They possessed, for several centuries, the same monopoly of many artificial remedies. But a new order of things is rising in medicine. Air, water, and light are taken without the advice of a physician, and bark

and laudanum are now prescribed every where by nurses and mistresses of families, with safety and advantage. Human reason cannot be stationary upon these subjects. The time must and will come, when, in addition to the above remedies, the general use of calomel, jalap, and the lancet, shall be considered among the most essential articles of the knowledge and rights of man.

It is no more necessary that a patient should be ignorant of the medicine he takes, to be cured by it, than that the business of government should be conducted with secrecy, in order to insure obedience to just laws. Much less is it necessary that the means of life should be perscribed in a dead language, or dictated with the solemn pomp of a necromancer. The effects of imposture, in every thing, are like the artificial health produced by the use of ardent spirits. Its vigour is temporary, and is always followed by misery and death.

The belief that the yellow fever and the plague are necessarily mortal, is as much the effect of a superstitious torpor in the understanding, as the ancient belief that the epilepsy was a supernatural disease, and that it was an offence against Heaven to attempt to cure it. It is partly from the influence of this torpor in the minds of some people,

that the numerous cures of the yellow fever, performed by a few simple remedies, were said to be of *other* diseases. It is necessary, for the conviction of such persons, that patients should always *die* of that, and other dangerous diseases, to prove that they have been affected by them.

The repairs which our world is destined to undergo will be incomplete, until pestilential fevers cease to be numbered among the widest outlets of human life.

There are many things which are now familiar to women and children, which were known a century ago only to a few men who lived in closets, and were distinguished by the name of philosophers.

We teach a hundred things in our schools less useful, and many things more difficult, than the knowledge that would be necessary to cure a yellow fever or the plague.

In my attempts to teach the citizens of Philadelphia, by my different publications, the method of curing themselves of yellow fever, I observed no difficulty in their apprehending every thing that was addressed to them, except what related

to the different states of the pulse. All the knowledge that is necessary to discover when bloodletting is proper, might be taught to a boy or girl of twelve years old in a few hours. I taught it in less time to several persons, during the prevalence of the epidemic.

I would as soon believe that ratafia was intended by the Author of Nature to be the only drink of man, instead of water, as believe that the knowledge of what relates to the health and lives of a *whole* city, or nation, should be confined to one, and that a small or a privileged order of men. But what have physicians, what have universities or medical societies done, after the labours and studies of many centuries, towards lessening the mortality of pestilential fevers? They have either copied or contradicted each other, in all their publications. Plagues and malignant fevers are still leagued with war and famine, in their ravages upon human life.

To prevent the formation and mortality of this fever, it will be necessary, when it makes its appearance in a city or country, to publish an account of those symptoms which I have called the *precursors* of the disease, and to exhort the people, as soon as they feel those symptoms, to have immediate

recourse to the remedies of purging or bleeding. The danger of delay in using one, or both these remedies, should be inculcated in the strongest terms, for the disease, like Time, has a lock on its forehead, but is bald behind. The bite of a rattle-snake is seldom fatal, because the medicines which cure it are applied or taken as soon as the poison comes in contact with the blood. There is less danger to be apprehended from the yellow fever than from the poison of the snake, provided the remedies for it are administered within a few hours after it is excited into action.

Let persons who are subject to chronic pains, or diseases of any kind, be advised not to be deceived by them. Every pain, at such a time, is the beginning of the disease; for it always acts first on debilitated parts of the body. From an ignorance of this law of epidemics many persons, by delaying their applications for help, perished with our fever.

Let nature be trusted into no case whatever, to cure this disease; and let no attack of it, however light, be treated with neglect. Death as certainly performs his work, when he steals on the system in the form of a mild intermittent, as he does, when he comes on with the symptoms of apoplexy, or a black vomiting.

Cleanliness, in houses and dress, cannot be too often inculcated during the prevalence of a yellow fever.

Let it not be supposed, that I mean that the history which I have given of the method of cure of this epidemic, should be applied, in all its parts, to the yellow fevers which may appear hereafter in the United States, or which exist at all times in the West-India islands. Season and climate vary this, as well as all other diseases. Bark and wine, so fatal in this, may be proper in a future yellow fever. But in the climate of the United States, I believe it will seldom appear with such symptoms of prostration and weakness, as not to require, in its first stage, evacuations of some kind.

The only inquiry, when the disease makes its appearance, should be, from what part of the body these evacuations should be procured; the order which should be pursued in obtaining them; and the quantity of each of the matters to be discharged, which should be withdrawn at a time.

Thus far did I venture, from my theory of the disease, and from the authorities of Dr. Hillary and Dr. Mosely, to decide in favour of evacuations in

the yellow fever; but Dr. Wade, and Mr. Chisholm again support me by their practice in the fevers of the East and West-Indies. They both gave strong mercurial purges, and bled in some cases. Dr. Wade confirmed, by his practice, the advantage of *gradually* abstracting stimulus from the system. He never drew blood, even in the most inflammatory cases, until he had first discharged the contents of the bowels. The doctor has further established the efficacy of a vegetable diet and of water as a drink, as the best means of preventing the disease in a hot climate.

The manner in which the miasmata that produce the plague act upon the system is so much like that which has been described in the yellow fever, and the accounts of the efficacy of low diet, in preparing the body for its reception, and of copious bleeding, cold air, and cold water, in curing it, are so similar, that all the directions which relate to preventing, mitigating, or curing the yellow fever may be applied to it. The fluids in the plague show a greater tendency to the skin, than they do in the yellow fever. Perhaps, upon this account, the early use of powerful sudorifics may be more proper in the former than in the latter disease. From the influence of early purging and bleeding in promoting sweats in the yellow fever,

there can be little doubt but the efforts of nature to unload the system in the plague, through the channel of the pores, might be accelerated by the early use of the same remedies. One thing, with respect to the plague, is certain, that its cure depends upon the abstraction of stimulus, either by means of plentiful sweats, or of purulent matter from external sores. Perhaps the efficacy of these remedies depends wholly upon their elevating the system from its prostrated state in a *gradual* manner. If this be the case, those natural discharges might be easily and effectually imitated by small and repeated bleedings.

To correspond in quantity with the discharge from the skin, blood-letting in the plague, when indicated, should be copious. A profuse sweat, continued for twenty-four hours, cannot fail of wasting many pounds of the fluids of the body. This was the duration of the critical sweats in the famous plague which was known by the name of the English sweating sickness, and which made its appearance in the army of Henry VII. in Milford-Haven in Wales, and spread from thence through every part of the kingdom.

The principles which lead to the prevention and cure of the yellow fever and the plague, apply

with equal force to the mitigation of the measles, and to the prevention or mitigation of the scarlatina anginosa, the dysentery, and the inflammatory jail fever. I have remarked elsewhere*, that a previous vegetable diet lessened the violence and danger of the measles. Dr. Sims taught me, many years ago, to prevent or mitigate the scarlatina anginosa, by means of gentle purges, after children are infect- by it†. Purges of salts have in many instances preserved whole families and neighbourhoods from the dysentery, where they have been exposed to its remote cause. During the late American war, an emetic seldom failed of preventing an attack of the hospital fever, when given in its forming state‡. I have had no experience of the effects of previous evacuations in abating the violence, or preventing the mortality of the malignant sore throat, but I can have no doubt of their efficacy, from the sameness of the state of the system in that disease, as in other malignant fevers. The debility induced in it is from depression, and the supposed symptoms of putrefaction are nothing but the disguised effects of a sudden and violent pressure of an inflammatory stimulus upon the arterial system.

* Vol. ii.

† Medical Memoirs, vol. i.

‡ Vol. i.

With these observations I close the history of the rise, progress, symptoms, and treatment of the bilious remitting yellow fever, which appeared in Philadelphia in the year 1793. My principal aim has been to revive and apply to it the principles and practice of Dr. Sydenham, and, however coldly those principles and that practice may be received by some physicians of the present day, I am convinced that experience, in all ages and in all countries, will vouch for their truth and utility.

A NARRATIVE

OF THE

STATE OF THE BODY AND MIND

OF THE AUTHOR,

DURING THE PREVALENCE OF THE FEVER.

NARRATIVES of escapes from great dangers of shipwreck, war, captivity, and famine have always formed an interesting part of the history of the body and mind of man. But there are deliverances from equal dangers which have hitherto passed unnoticed; I mean from pestilential fevers. I shall briefly describe the state of my body and mind during my intercourse with the sick in the epidemic of 1793. The account will throw additional light upon the disease, and probably illustrate some of the laws of the animal economy. It will, moreover, serve to furnish a lesson to all who may be placed in similar circumstances to commit their lives, without fear, to the protection of that Being, who is able to save to the uttermost, not only from future, but from present evil.

Some time before the fever made its appearance, my wife and children went into the state of New-Jersey, where they had long been in the habit of spending the summer months. My family, about the 25th of August, consisted of my mother, a sister, who was on a visit to me, a black servant man, and a mulatto boy. I had five pupils, viz. Warner Washington and Edward Fisher, of Virginia, John Alston, of South-Carolina, and John Redman Coxe (grandson to Dr. Redman) and John Stall, both of this city. They all crowded around me upon the sudden increase of business, and with one heart devoted themselves to my service, and to the cause of humanity.

The credit which the new mode of treating the disease acquired, in all parts of the city, produced an immense influx of patients to me from all quarters. My pupils were constantly employed; at first in putting up purging powders, but, after a while, only in bleeding and visiting the sick.

Between the 8th and the 15th of September I visited and prescribed for between a hundred and a hundred and twenty patients a day. Several of my pupils visited a fourth or fifth part of that number. For a while we refused no calls. In the short intervals of business, which I spent at my

meals, my house was filled with patients, chiefly the poor, waiting for advice. For many weeks I seldom ate without prescribing for numbers as I sat at my table. To assist me at these hours, as well as in the night, Mr. Stall, Mr. Fisher, and Mr. Coxe accepted of rooms in my house, and became members of my family. Their labours now had no remission.

Immediately after I adopted the antiphlogistic mode of treating the disease, I altered my manner of living. I left off drinking wine and malt liquors. The good effects of the disuse of these liquors helped to confirm me in the theory I had adopted of the disease. A troublesome head-ach, which I had occasionally felt, and which excited a constant apprehension that I was taking the fever, now suddenly left me. I likewise, at this time, left off eating solid animal food, and lived wholly, but sparingly, upon weak broth, potatoes, raisins, coffee, and bread and butter.

From my constant exposure to the sources of the disease, my body became highly impregnated with miasmata. My eyes were yellow, and sometimes a yellowness was perceptible in my face. My pulse was preternaturally quick, and I had profuse sweats every night. These sweats were so

offensive, as to oblige me to draw the bed-clothes close to my neck, to defend myself from their smell. They lost their fœtor entirely, upon my leaving off the use of broth, and living entirely upon milk and vegetables. But my nights were rendered disagreeable, not only by these sweats, but by the want of my usual sleep, produced in part by the frequent knocking at my door, and in part by anxiety of mind, and the stimulus of the miasmata upon my system. I went to bed in conformity to habit only, for it ceased to afford me rest or refreshment. When it was evening I wished for morning; and when it was morning, the prospect of the labours of the day, at which I often shuddered, caused me to wish for the return of evening. The degrees of my anxiety may be easily conceived when I add, that I had at one time upwards of thirty heads of families under my care; among these were Mr. Josiah Coates, the father of eight, and Mr. Benjamin Scull and Mr. John Morell, both fathers of ten children. They were all in imminent danger; but it pleased God to make me the instrument of saving each of their lives. I rose at six o'clock, and generally found a number of persons waiting for advice in my shop or parlour. Hitherto the success of my practice gave a tone to my mind, which imparted preternatural vigour to my body. It was meat and drink to me to fulfil

the duties I owed to my fellow-citizens, in this time of great and universal distress. From a hope that I might escape the disease, by avoiding every thing that could excite it into action, I carefully avoided the heat of the sun, and the coldness of the evening air. I likewise avoided yielding to every thing that should raise or depress my passions. But, at such a time, the events which influence the state of the body and mind are no more under our command than the winds or weather. On the evening of the 14th of September, after eight o'clock, I visited the son of Mrs. Berriman, near the Swedes's church, who had sent for me early in the morning. I found him very ill. He had been bled in the forenoon, by my advice, but his pulse indicated a second bleeding. It would have been difficult to procure a bleeder at that late hour. I therefore bled him myself. Heated by this act, and debilitated by the labours of the day, I rode home in the evening air. During the ensuing night I was much indisposed. I rose, notwithstanding, at my usual hour. At eight o'clock I lost ten ounces of blood, and immediately afterwards got into my chair, and visited between forty and fifty patients before dinner. At the house of one of them I was forced to lie down a few minutes. In the course of this morning's labours my mind was suddenly thrown off its pivots, by the last

look, and the pathetic cries, of a friend for help, who was dying under the care of a French physician. I came home about two o'clock, and was seized, immediately afterwards, with a chilly fit and a high fever. I took a dose of the mercurial medicine, and went to bed. In the evening I took a second purging powder, and lost ten ounces more of blood. The next morning I bathed my face, hands, and feet in cold water for some time. I drank plentifully, during the day and night, of weak hyson tea, and of water, in which currant jelly had been dissolved. At eight o'clock I was so well as to admit persons who came for advice into my room, and to receive reports from my pupils of the state of as many of my patients as they were able to visit; for, unfortunately, they were not able to visit them all (with their own) in due time; by which means several died. The next day I came down stairs, and prescribed in my parlour for not less than a hundred people. On the 19th of the same month, I resumed my labours, but in great weakness. It was with difficulty that I ascended a pair of stairs, by the help of a banister. A slow fever, attended with irregular chills, and a troublesome cough, hung constantly upon me. The fever discovered itself in the heat of my hands, which my patients often told me were warmer than their own. The breath and exhalations from the sick

now began to affect me, in small and infected rooms, in the most sensible manner. On the morning of the 4th of October I suddenly sunk down, in a sick room, upon a bed, with a giddiness in my head. It continued for a few minutes, and was succeeded by a fever, which confined me to my house the remaining part of the day.

Every moment in the intervals of my visits to the sick was employed in prescribing, in my own house, for the poor, or in sending answers to messages from my patients; time was now too precious to be spent in counting the number of persons who called upon me for advice. From circumstances I believe it was frequently 150, and seldom less than 50 in a day, for five or six weeks. The evening did not bring with it the least relaxation from my labours. I received letters every day from the country, and from distant parts of the union, containing inquiries into the mode of treating the disease, and after the health and lives of persons who had remained in the city. The business of every evening was to answer these letters, also to write to my family. These employments, by affording a fresh current to my thoughts, kept me from dwelling on the gloomy scenes of the day. After these duties were performed, I copied into my note book all the observations I had col-

lected during the day, and which I had marked with a pencil in my pocket-book in sick rooms, or in my carriage. To these constant labours of body and mind were added distresses from a variety of causes. Having found myself unable to comply with the numerous applications that were made to me, I was obliged to refuse many every day. My sister counted forty-seven in one forenoon before eleven o'clock. Many of them left my door with tears, but they did not feel more distress than I did from refusing to follow them. Sympathy, when it vents itself in acts of humanity, affords pleasure, and contributes to health; but the reflux of pity, like anger, gives pain, and disorders the body. In riding through the streets, I was often forced to resist the intreaties of parents imploring a visit to their children, or of children to their parents. I recollect, and even *yet* with pain, that I tore myself at one time from five persons in Moravian-alley, who attempted to stop me, by suddenly whipping my horse, and driving my chair as speedily as possible beyond the reach of their cries.

The solicitude of the friends of the sick for help may further be conceived of, when I add, that the most extravagant compensations were sometimes offered for medical services, and, in one instance, for only a single visit. I had no merit in

refusing these offers, and I have introduced an account of them only to inform such physicians as may hereafter be thrown into a similar situation, that I was favoured with an exemption from the fear of death, in proportion as I subdued every selfish feeling, and laboured exclusively for the benefit of others. In every instance in which I was forced to refuse these pathetic and earnest applications, my distress was heightened by the fear that the persons, whom I was unable to visit, would fall into improper hands, and perish by the use of bark, wine, and laudanum.

But I had other afflictions besides the distress which arose from the abortive sympathy which I have described. On the 11th of September, my ingenious pupil, Mr. Washington, fell a victim to his humanity. He had taken lodgings in the country, where he sickened with the disease. Having been almost uniformly successful in curing others, he made light of his fever, and concealed the knowledge of his danger from me, until the day before he died. On the 18th of September Mr. Stall sickened in my house. A delirium attended his fever from the first hour it affected him. He refused, and even resisted force when used to compel him to take medicine. He died on the 23d of

September*. Scarcely had I recovered from the shock of the death of this amiable youth, when I was called to weep for a third pupil, Mr. Alston, who died in my neighbourhood the next day. He had worn himself down, before his sickness, by uncommon exertions in visiting, bleeding, and even sitting up with sick people. At this time Mr. Fisher was ill in my house. On the 26th of the month, at 12 o'clock, Mr. Coxe, my only assistant, was seized with the fever, and went to his grand-

* This accomplished youth had made great attainments in his profession. He possessed, with an uncommon genius for science, talents for music, painting, and poetry. The following copy of an unfinished letter to his father (who had left the city) was found among his papers after his death. It shows that the qualities of his heart were equal to those of his head.

"*Philadelphia, September* 15, 1793.

"MY DEAR FATHER,

"I TAKE every moment I have to spare to write to you, which is not many; but you must excuse me, as I am doing good to my fellow-creatures. At this time, every moment I spend in idleness might probably cost a life. The sickness increases every day, but most of those who die, die for want of good attendance. We cure all we are called to on the first day, who are well attended, but so many doctors are sick, the poor creatures are glad to get a doctor's servant."

father's. I followed him with a look, which I feared would be the last in my house. At two o'clock my sister, who had complained for several days, yielded to the disease, and retired to her bed. My mother followed her, much indisposed, early in the evening. My black servant man had been confined with the fever for several days, and had on that day, for the first time, quitted his bed. My little mulatto boy, of eleven years old, was the only person in my family who was able to afford me the least assistance. At eight o'clock in the evening I finished the business of the day. A solemn stillness at that time pervaded the streets. In vain did I strive to forget my melancholy situation by answering letters, and by putting up medicines, to be distributed next day among my patients. My faithful black man crept to my door, and at my request sat down by the fire, but he added, by his silence and dullness, to the gloom which suddenly overpowered every faculty of my mind.

On the first day of October, at two o'clock in the afternoon, my sister died. I got into my carriage within an hour after she expired, and spent the afternoon in visiting patients. According as a sense of duty, or as grief has predominated in my mind, I have approved, and disapproved of this act, ever since. She had borne a share in my labours. She

had been my nurse in sickness, and my casuist in my choice of duties. My whole heart reposed itself in her friendship. Upon being invited to a friend's house in the country, when the disease made its appearance in the city, she declined accepting the invitation, and gave as a reason for so doing, that I might probably require her services in case of my taking the disease, and that, if she were sure of dying, she would remain with me, provided that, by her death, she could save my life. From this time I declined in health and strength. All motion became painful to me. My appetite began to fail. My night sweats continued. My short and imperfect sleep was disturbed by distressing or frightful dreams. The scenes of them were derived altogether from sick rooms and grave-yards. I concealed my sorrows as much as possible from my patients; but when alone, the retrospect of what was past, and the prospect of what was before me, the termination of which was invisible, often filled my soul with the most poignant anguish. I wept frequently when retired from the public eye, but I did not weep over the lost members of my family alone. I beheld or heard every day of the deaths of citizens, useful in public, or amiable in private life. It was my misfortune to lose as patients the Rev. Mr. Fleming and Mr. Graesel, both exhausted by their labours

of piety and love among the poor, before they sickened with the disease. I saw the last struggles of departing life in Mr. Powel, and deplored, in his death, an upright and faithful servant of the public, as well as a sincere and affectionate friend. Often did I mourn over persons who had, by the most unparalleled exertions, saved their friends and families from the grave, at the expence of their own lives. Many of these martyrs to humanity were in humble stations. Among the members of my profession, with whom I had been most intimately connected, I had daily cause of grief and distress. I saw the great and expanded mind of Dr. Pennington, shattered by delirium, just before he died. He was to me dear and beloved, like a younger brother. He was, moreover, a Joab in the contest with the disease. Philadelphia must long deplore the premature death of this excellent physician. Had he lived a few years longer, he would have filled an immense space in the republic of medicine*. It was my affliction to see my friend Dr. John Morris breathe his last, and to hear the first

* Before he finished his studies in medicine, he published a volume of ingenious and patriotic "Chemical and Economical Essays, designed to illustrate the connection between the theory and practice of chemistry, and the application of that science to some of the arts and manufactures of the United States of America."

effusions of the most pathetic grief from his mother, as she bursted from the room in which he died. But I had distress from the sickness, as well as the deaths of my brethren in physic. My worthy friends, Dr. Griffitts, Dr. Say, and Dr. Mease, were suspended by a thread over the grave, nearly at the same time. Heaven, in mercy to me, as well as in kindness to the public and their friends, preserved their lives. Had they died, the measure of my sorrows would have been complete.

I have said before, that I early left off drinking wine; but I used it in another way. I carried a little of it in a vial in my pocket, and when I felt myself fainty, after coming out of a sick room, or after a long ride, I kept about a table spoonful of it in my mouth for half a minute, or longer, without swallowing it. So weak and excitable was my system, that this small quantity of wine refreshed and invigorated me as much as half a pint would have done at any other time. The only difference was, that the vigour I derived from the wine in the former, was of shorter duration than when taken in the latter way.

For the first two weeks after I visited patients in the yellow fever, I carried a rag wetted with vinegar, and smelled it occasionally in sick rooms:

but after I saw and felt the signs of the universal presence of miasmata in my system, I laid aside this and all other precautions. I rested myself on the bed-side of my patients, and I drank milk or eat fruit in their sick rooms. Besides being saturated with miasmata, I had another security against being infected in sick rooms, and that was, I went into scarcely a house which was more infected than my own. Many of the poor people, who called upon me for advice, were bled by my pupils in my shop, and in the yard, which was between it and the street. From the want of a sufficient number of bowls to receive their blood, it was sometimes suffered to flow and putrify upon the ground. From this source, streams of miasmata were constantly poured into my house, and conveyed into my body by the air, during every hour of the day and night.

The deaths of my pupils and sister have often been urged as objections to my mode of treating the fever. Had the same degrees of labour and fatigue, which preceded the attack of the yellow fever in each of them, preceded an attack of a common pleurisy, I think it probable that some, or perhaps all of them, would have died with it. But when the influence of the concentrated miasmata which filled my house was added to that of constant

fatigue upon their bodies, what remedies could be expected to save their lives? Under the above circumstances, I consider the recovery of the other branches of my family from the fever (and none of them escaped it) with emotions, such as I should feel had we all been revived from apparent death by the exertions of a humane society.

For upwards of six weeks I did not taste animal food, nor fermented liquors of any kind. The quantity of aliment which I took, inclusive of drinks, during this time, was frequently not more than one or two pounds in a day. Yet upon this diet I possessed, for a while, uncommon activity of body. This influence of abstinence upon bodily exertion has been happily illustrated by Dr. Jackson, in his directions for preserving the health of soldiers in hot climates. He tells us, that he walked a hundred miles in three days, in Jamaica, during which time he breakfasted on tea, supped on bread and sallad, and drank nothing but lemonade or water. He adds further, that he walked from Edinburgh to London in eleven days and a half, and that he travelled with the most ease when he only breakfasted and supped, and drank nothing but water. The fatigue of riding on horseback is prevented or lessened by abstinence from solid food. Even the horse suffers least from

a quick and long journey when he is fed sparingly with hay. These facts add weight to the arguments formerly adduced, in favour of a vegetable diet, in preventing or mitigating the action of the miasmata of malignant fevers upon the system. In both cases the abstraction of stimulus removes the body further from the reach of undue excitement and morbid depression.

Food supports life as much by its stimulus, as by affording nourishment to the body. Where an artificial stimulus acts upon the system the natural stimulus of food ceases to be necessary. Under the influence of this principle, I increased or diminished my food with the signs I discovered of the increase or diminution of the seeds of the disease in my body. Until the 15th of September I drank weak coffee, but after that time I drank nothing but milk, or milk and water, in the intervals of my meals. I was so satisfied of the efficacy of this mode of living, that I believed life might have been preserved, and a fever prevented, for many days, with a much greater accumulation of miasmata in my system, by means of a total abstinence from food. Poison is a relative term, and an excess in quantity, or a derangement in place, is necessary to its producing deleterious effects. The miasmata of the yellow fever produced sick-

ness and death only from the excess of their quantity, or from their force being increased by the addition of those other stimuli which I have elsewhere called exciting causes.

In addition to low diet, as a preventive of the disease, I obviated costiveness by taking occasionally a calomel pill, or by chewing rhubarb.

I had read and taught, in my lectures, that fasting increases acuteness in the sense of touch. My low living had that effect, in a certain degree, upon my fingers. I had a quickness in my perception, of the state of the pulse in the yellow fever, that I had never experienced before in any other disease. My abstemious diet, assisted perhaps by the state of my feelings, had likewise an influence upon my mind. Its operations were performed with an ease and a celerity, which rendered my numerous and complicated duties much less burdensome than they would probably have been under other circumstances of diet, or a less agitated state of my passions.

My perception of the lapse of time was new to me. It was uncommonly slow. The ordinary business and pursuits of men appeared to me in a light that was equally new. The hearse and the

grave mingled themselves with every view I took of human affairs. Under these impressions I recollect being as much struck with observing a number of men, employed in digging the cellar of a large house, as I should have been, at any other time, in seeing preparations for building a palace upon a cake of ice. I recollect, further, being struck with surprise, about the 1st of October, in seeing a man busily employed in laying in wood for the approaching winter. I should as soon have thought of making provision for a dinner on the first day of the year 1800.

In the account of my distresses, I have passed over the slanders which were propagated against me by some of my brethren. I have mentioned them only for the sake of declaring, in this public manner, that I most heartily forgive them; and that if I discovered, at any time, an undue sense of the unkindness and cruelty of those slanders, it was not because I felt myself injured by them, but because I was sure they would irreparably injure my fellow-citizens, by lessening their confidence in the only remedies that I believed to be effectual in the reigning epidemic. One thing in my conduct towards these gentlemen may require justification; and that is, my refusing to consult with them. A Mahometan and a Jew might as well

attempt to worship the Supreme Being in the same temple, and through the medium of the same ceremonies, as two physicians of opposite principles and practice attempt to confer about the life of the same patient. What is done in consequence of such negociations (for they are not consultations) is the ineffectual result of neutralized opinions; and wherever they take place, should be considered as the effect of a criminal compact between physicians, to assess the property of their patients, by a shameful prostitution of the dictates of their consciences. Besides, I early discovered that it was impossible for me, by any reasonings, to change the practice of some of my brethren. Humanity was, therefore, on the side of leaving them to themselves; for the extremity of *wrong* in medicine, as in morals and government, is often a less mischief than that mixture of *right* and *wrong* which serves, by palliating, to perpetuate evil.

After the loss of my health I received letters from my friends in the country, pressing me, in the strongest terms, to leave the city. Such a step had become impracticable. My aged mother was too infirm to be removed, and I could not leave her. I was, moreover, part of a little circle of physi-

cians, who had associated themselves in support of the new remedies. This circle would have been broken by my quitting the city. The weather varied the disease, and, in the weakest state of my body, I expected to be able, from the reports of my pupils, to assist my associates in detecting its changes, and in accommodating our remedies to them. Under these circumstances it pleased God to enable me to reply to one of the letters that urged my retreat from the city, that "I had resolved to stick to my principles, my practice, and my patients, to the last extremity."

On the 9th of October, I visited a considerable number of patients, and, as the day was warm, I lessened the quantity of my clothing. Towards evening I was seized with a pain in the back, which obliged me to go to bed at eight o'clock. About twelve I awoke with a chilly fit. A violent fever, with acute pains in different parts of my body, followed it. At one o'clock I called for Mr. Fisher, who slept in the next room. He came instantly, with my affectionate black man, to my relief. I saw my danger painted in Mr. Fisher's countenance. He bled me plentifully, and gave me a dose of the mercurial medicine. This was immediately rejected. He gave me a second dose,

which likewise acted as an emetic, and discharged a large quantity of bile from my stomach. The remaining part of the night was passed under an apprehension that my labours were near an end. I could hardly expect to survive so violent an attack of the fever, broken down, as I was, by labour, sickness, and grief. My wife and seven children, whom the great and distresing events that were passing in our city had jostled out of my mind for six or seven weeks, now resumed their former place in my affections. My wife had stipulated, in consenting to remain in the country, to come to my assistance in case of my sickness; but I took measures which, without alarming her, proved effectual in preventing it. My house was enveloped in foul air, and the probability of my death made her life doubly necessary to my family. In the morning the medicine operated kindly, and my fever abated. In the afternoon it returned, attended with a great inclination to sleep. Mr. Fisher bled me again, which removed the sleepiness. The next day the fever left me, but in so weak a state, that I awoke two successive nights with a faintness which threatened the extinction of my life. It was removed each time by taking a little aliment. My convalescence was extremely slow. I returned, in a very gradual manner, to my

former habits of diet. The smell of animal food, the first time I saw it at my table, forced me to leave the room. During the month of November, and all the winter months, I was harassed with a cough, and a fever somewhat of the hectic kind. The early warmth of the spring removed those complaints, and restored me, through Divine goodness, to my usual state of health.

I should be deficient in gratitude, were I to conclude this narrative without acknowledging my obligations to my surviving pupils, Mr. Fisher and Mr. Coxe, for the great support and sympathy I derived from them in my labours and distresses.

I take great pleasure likewise in acknowledging my obligations to my former pupil, Dr. Woodhouse, who assisted me in the care of my patients, after I became so weak as not to be able to attend them with the punctuality their cases required. The disinterested exploits of these young gentlemen in the cause of humanity, and their success in the treatment of the disease, have endeared their names to hundreds, and, at the same time, afforded a prelude of their future eminence and usefulness in their profession.

But wherewith shall I come before the great FATHER and REDEEMER of men, and what shall I render unto him for the issue of my life from the grave?

———Here all language fails:———
Come then, expressive silence, muse his praise.

AN ACCOUNT

OF THE

BILIOUS REMITTING AND INTERMITTING

YELLOW FEVER,

AS IT

APPEARED IN PHILADELPHIA,

IN THE YEAR 1794.

AN ACCOUNT, &c.

I CONCLUDED the history of the symptoms of the bilious remitting yellow fever, as it appeared in Philadelphia in the year 1793, by taking notice, that the diseases which succeeded that fatal epidemic were all of a highly inflammatory nature.

In that history I described the weather and diseases of the months of March and April, in the spring of 1794.

The weather, during the first three weeks of the month of May, was dry and temperate, with now and then a cold day and night. The strawberries were ripe on the 15th, and cherries on the 22d day of the month, in several of the city gardens. A

shower of hail fell on the afternoon of the 22d, which broke the glass windows of many houses. A single stone of this hail was found to weigh two drachms. Several people collected a quantity of it, and preserved it till the next day in their cellars, when they used it for the purpose of cooling their wine. The weather, after this hail storm, was rainy during the remaining part of the month. The diseases were still inflammatory. Many persons were afflicted with a sore mouth in this month.

The weather in June was pleasant and temperate. Several intermittents, and two very acute pleurisies, occurred in my practice during this month. The intermittents were uncommonly obstinate, and would not yield to the largest doses of the bark.

In a son of Mr. Samuel Coates, of seven years old, the bark produced a sudden translation of this state of fever to the head, where it produced all the symptoms of the first stage of internal dropsy of the brain. This once formidable disease yielded, in this case, to three bleedings, and other depleting medicines. The blood drawn in every instance was sizy.

From the inflammatory complexion of the diseases of the spring, and of the beginning of June,

I expected the fevers of the summer and autumn would be of a violent and malignant nature. I was the more disposed to entertain this opinion from observing the stagnating filth of the gutters of our city; for the citizens of Philadelphia, having an interest in rejecting the proofs of the generation of the epidemic of 1793 in their city, had neglected to introduce the regulations which were necessary to prevent the production of a similar fever from domestic putrefaction. They had, it is true, taken pains to remove the earth and offal matters which accumulated in the streets; but these, from their being always dry, were inoffensive as remote causes of disease. Perhaps the removal of the earth did harm, by preventing the absorption of the miasmata which were constantly exhaled from the gutters.

On the 6th of June, Dr. Physick called upon me, and informed me that he had a woman in the yellow fever under his care. The information did not surprise me, but it awakened suddenly in my mind the most distressing emotions. I advised him to inform the mayor of the city of the case, but by no means to make it more public, for I hoped that it might be a sporadic instance of the disease, and that it might not become general in the city.

On the 12th of the month, my fears of the return of the yellow fever were revived by visiting Mr. Isaac Morris, whom I found very ill with a violent puking, great pain in his head, a red eye, and a slow tense pulse. I ordered him to be bled, and purged him plentifully with jalap and calomel. His blood had that appearance which has been compared by authors to the washings of raw flesh in water. Upon his recovery, he told me that he "suspected he had had the yellow fever, for that his feelings were exactly such as they had been in the fall of 1793, at which time he had an attack of that disease."

On the 14th of June, I was sent for, in the absence of Dr. Mease, to visit his sister in a fever. Her mother, who had become intimately acquainted with the yellow fever, by nursing her son and mother in it, the year before, at once decided upon the name of her daughter's disease. Her symptoms were violent, but they appeared in an intermitting form. Each paroxysm of her fever was like a hurricane to her whole system. It excited apprehensions of immediate dissolution in the minds of all her friends. The loss of sixty ounces of blood, by five bleedings, copious doses of calomel and jalap, and a large blister to her neck, soon

vanquished this malignant intermittent, without the aid of a single dose of bark.

During the remaining part of the month, I was called to several cases of fever, which had symptoms of malignity of an alarming nature. The son of Mr. Andrew Brown had a hæmorrhage from his nose in a fever, and a case of menorrhagia occurred in a woman, who was affected with but a slight degree of fever.

In the course of this month, I met with several cases of swelled testicles, which had succeeded fevers so slight as to have required no medical aid. Dr. Desportes records similar instances of a swelling in the testicles, which appeared during the prevalence of the yellow fever in St. Domingo, in the year 1741*.

In the month of July, I visited James Lefferty and William Adams, both of whom had, with the usual symptoms of yellow fever, a yellow colour on their skin. I likewise attended three women, in whom I discovered the disease under forms in which I had often seen it in the year 1793. In two of them it appeared with symptoms of a violent

* Histoire des Maladies de Saint Domingue, p. 112.

colic, which yielded only to frequent bleedings. In the third, it appeared with symptoms of pleurisy, which was attended with a constant hæmorrhage from the uterus, although blood was drawn almost daily from her arm, for six or seven days. About the middle of this month many people complained of nausea, which in some cases produced a puking, without any symptoms of fever.

During the month of August, I was called to Peter Denham, Mrs. Bruce, a son of Jacob Gribble, Mr. Cole, John Madge, Mrs. Gardiner, Miss Purdon, Mrs. Gavin, and Benjamin Cochran, each of whom had all the usual symptoms of the yellow fever. I found Mr. Cochran sitting on the side of his bed, with a pot in his hand, into which he was discharging black matter from his stomach, on the 6th day of the disease. He died on the next day. Mrs. Gavin died on the 6th day of her disease, from a want of sufficient bleeding, to which she objected from the influence of her friends. Besides the above persons, I visited Mr. George Eyre at Kensington, Mr. Thomas Fitzsimons, and Thomas M'Kean, jun. son of the chief justice of Pennsylvania, all of whom had the disease, but in a moderate degree. During this time I took no steps to alarm my fellow-citizens with the unwelcome news of its being in town. But my mind was

not easy in this situation, for I daily heard of persons who died of the disease, who might probably have been saved had they applied early for relief, or had a suspicion become general among all our physicians of the existence of the yellow fever in the city. The cholera infantum was common during this, and part of the preceding month. It was more obstinate and more fatal than in common years.

On the 12th of this month, a letter from Baltimore announced the existence of the yellow fever in that city. One of the patients whom I visited in this month, in the fever, Mr. Cole, brought the seeds of it in his body from that place.

On the 25th of the month, two members of a committee, lately appointed by the government of the state, for taking care of the health of the city, called upon me to know whether the yellow fever was in town. I told them it was, and mentioned some of the cases that had come under my notice; but informed them, at the same time, that I had seen no case in which it had been contagious, and that, in every case where I had been called early, and where my prescriptions had been followed, the disease had yielded to medicine.

On the 29th of the month I received an invitation to attend a meeting of the committee of health, at their office at Walnut-street. They interrogated me respecting the intelligence I had given to two of their members on the 25th. I repeated it to them, and mentioned the names of all the persons I had attended in the yellow fever since the 9th of June.

Neither this, nor several subsequent communications to the committee of health produced the effect that was intended by them. Dr. Physick and Dr. Dewees supported me in my declaration, but their testimony did not protect me from the clamours of my fellow-citizens, nor from the calumnies of some of my brethren, who, while they daily attended or lost patients in the yellow fever, called it by the less unpopular names of

1. A common intermittent. 2. A bilious fever. 3. An inflammatory remitting fever. 4. A putrid fever. 5. A nervous fever. 6. A dropsy of the brain. 7. A lethargy. 8. Pleurisy. 9. Gout. 10. Rheumatism. 11. Colic. 12. Dysentery. And 13. Sore throat.

It was said further, by several of the physicians of the city, not to be the yellow fever, because some

who had died of it had not a sighing in the beginning, and a black vomiting in the close of the disease. Even where the black vomiting and yellow skin occurred, they were said not to constitute a yellow fever, for that those symptoms occurred in other fevers.

Let not the reader complain of the citizens and physicians of Philadelphia alone. A similar conduct has existed in all cities upon the appearance of great and mortal epidemics.

Nor is it any thing new for mortal diseases to receive mild and harmless names from physicians. The plague was called a spotted fever, for several months, by some of the physicians of London, in the year 1665.

Notwithstanding the pains which were taken to discredit the report of the existence of the yellow fever in the city, it was finally believed by many citizens, and a number of families in consequence of it left the city. And in spite of the harmless names of intermitting and remitting fever, and the like, which were given to the disease, the bodies of persons who had died with it were conveyed to the grave, in several instances, upon a hearse, the

way in which those who died of the yellow fever were buried the year before.

From the influence of occasional showers of rain, in the months of September and October, the disease was frequently checked, so as to disappear altogether for two or three days in my circle of practice. It was observed, that while showers of rain lessened, moist or damp weather, without rain, increased it.

The cold weather in October checked the fever, but it did not banish it from the city. It appeared in November, and in all the succeeding winter and spring months. The weather, during these months, being uncommonly moderate, will account for its not being destroyed at the time in which the disease usually disappeared in former years.

The causes which predisposed to this fever were the same as in the year 1793. Persons of full habits, strangers, and negroes, were most subject to it. It may seem strange to those persons who have read that the negroes are seldom affected with this fever in the West-Indies, that they were so much affected by it in Philadelphia. There were two reasons for it. Their manner of living was as plentiful as that of white people in the West-Indies,

and they generally resided in alleys and on the skirts of the city, where they were more exposed to noxious exhalation, than in its more open and central parts.

The summer fruits, from being eaten before they were ripe, or in too large a quantity, became frequently exciting causes of this fever. It was awakened in one of my patients by a supper of peaches and milk. Cucumbers, in several instances, gave vigour to the miasmata which had been previously received into the system. Terror excited it in two of my patients. In one of them, a young woman, this terror was produced by hearing, while she sat at dinner, that a hearse had passed by her door with a person on it who had died of the yellow fever. Vexation excited it in a foreign master of a vessel, in consequence of a young woman suddenly breaking an engagement to marry him. The disease terminated fatally in this instance.

It was sometimes unfortunate for patients when the disease was excited by an article of diet, or by any other cause which acted suddenly upon the system; for it led both them, and in some instances their physicians, to confound those exciting causes with its remote cause, and to view the disease with-

out the least relation to the prevailing epidemic. It was from this mistake that many persons were said to die of intemperance, of eating ice creams, and of trifling colds, who certainly died of the yellow fever. The rum, the ice creams, and the changes in the air, in all these cases, acted like sparks of fire which set in motion the quiescent particles of tinder or gunpowder.

I shall now proceed to describe the symptoms which this fever assumed during the periods which have been mentioned. This detail will be interesting to physicians who wish to see how little nature regards the nosological arrangement of authors, in the formation of the symptoms of diseases, and how much the seasons influence epidemics. A physician, who had practised medicine near sixty years in the city of Philadelphia, declared that he had never seen the dysentery assume the same symptoms in any two *successive* years. The same may be said probably of nearly all epidemic diseases.

In the arrangement of the symptoms of this fever, I shall follow the order I adopted in my Account of the Yellow Fever of 1793, and describe them as they appeared in the sanguiferous system, the liver, lungs, and brain, the alimentary canal, the secretions and excretions, the nervous system,

the senses and appetites, upon the skin, and in the blood.

Two premonitory symptoms struck me this year, which I did not observe in 1793. One of them was a frequent discharge of pale urine for a day or two before the commencement of the fever; the other was sleep unusually sound, the night before the attack of the fever. The former symptom was a precursor of the plague of Bassora, in the year 1773.

I. I observed but few symptoms in the sanguiferous system different from what I have mentioned in the fever of the preceding year. The slow and intermitting pulse occurred in many, and a pulse nearly imperceptible, in three instances. It was seldom very frequent. In John Madge, an English farmer, who had just arrived in our city, it beat only 64 strokes in a minute, for several days, while he was so ill as to require three bleedings a day, and at no time of his fever did his pulse exceed 96 strokes in a minute. In Miss Sally Eyre, the pulse at one time was at 176, and at another time it was at 140; but this frequency of pulse was very rare. In a majority of the cases which came under my notice, where the danger was great, it seldom exceeded 80 strokes in a minute. I have

been thus particular in describing the frequency of the pulse, because custom has created an expectation of that part of the history of fevers; but my attention was directed chiefly to the different degrees of *force* in the pulse, as manifested by its tension, fulness, intermissions, and inequality of action. The *hobbling* pulse was common. In John Geraud, I perceived a quick stroke to succeed every two strokes of an ordinary healthy pulse. The intermitting, chorded, and depressed pulse occurred in many cases. I called it the year before a *sulky* pulse. One of my pupils, Mr. Alexander, called it more properly a *locked* pulse. I think I observed this state of the pulse to occur chiefly in persons in whom the fever came on without a chilly fit.

Hæmorrhages occurred in all the grades of this fever, but less frequently in my practice this year than in the year before. It occurred, after a ninth bleeding, in Miss Sally Eyre, from the nose and bowels. It occurred from the nose, after a sixth bleeding, in Mrs. Gardiner, who was at that time in the sixth month of her pregnancy. This symptom, which was accompanied by a tense and quick pulse, induced me to repeat the bleeding a seventh time. The blood was very sizy. I mention this fact to establish the opinion that hæmorrhages de-

pend upon too much action in the blood-vessels, and that they are not occasioned by a dissolved state of the blood.

There was a disposition at this time to hæmorrhage in persons who were in apparent good health. A private, in a company of volunteers commanded by Major M'Pherson, informed me that three of his messmates were affected by a bleeding at the nose, for several days after they left the city, on their way to quell the insurrection in the western counties of Pennsylvania.

II. The liver did not exhibit the usual marks of inflammation. Perhaps my mode of treating the fever prevented those symptoms of hepatic affection which belong to the yellow fever in tropical climates. The lungs were frequently affected; and hence the disease was in many instances called a pleurisy or a catarrh. This inflammation of the lungs occurred in a more especial manner in the winter season. It was distinguished from the pleurisies of common years by a red eye, by a vomiting of green or yellow bile, by black stools, and by requiring very copious blood-letting to cure it.

The head was affected, in this fever, not only with coma and delirium, but with mania. This

symptom was so common as to give rise to an opinion that madness was epidemic in our city. I saw no case of it which was not connected with other symptoms of the bilious remitting fever. The Rev. Mr. Keating, one of the ministers of the Roman church, informed me that he had been called to visit seven deranged persons in his congregation, in the course of one week, in the month of March. Two of them had made attempts upon their lives. This mania was probably, in each of the above cases, a symptom only of general fever. The dilatation of the pupil was universal in this fever.

Sore eyes were common during the prevalence of this fever. In Mrs. Leaming, this affection of the eyes was attended with a fever of a tertian type.

III. The alimentary canal suffered as usual in this fever. A vomiting was common upon the first attack of the disease. I observed this symptom to be less common after the cold and rainy weather which took place about the first of October.

I have in another place mentioned the influence of the weather upon the symptoms of this disease. In addition to the facts which have been formerly recorded, I shall add one more from Dr. Desportes.

He tells us, that in dry weather the disease affects the head, and that the bowels in this case are more obstinately costive than in moist weather. This influence of the atmosphere on the yellow fever will not surprise those physicians who recollect the remarkable passage in Hippocrates, in which he says, that in the violent heats of summer, fevers appeared, but without any sweat; but if a shower, though ever so slight, appeared, a sweat broke out in the beginning.* I observed further, that a vomiting rarely attended those cases in which there was an absence of a chilly fit in the beginning of the fever. The same observation is made by Dr. Desportes†.

The matter discharged by vomiting was green or yellow bile in most cases. Mrs. Jones, the wife of Captain Lloyd Jones, and one other person, discharged black bile within one hour after they were attacked by the fever. I have taken notice, in the History of the Yellow Fever of 1793, that a discharge of bile in the beginning of this fever was always a favourable symptom. Dr. Davidson of St. Vincents, in a letter to me, dated the 22d July, 1794, makes the same remark. It shows

* Epidemics, book XI. sect. I.

† Les Maladies de St. Domingue, vol. I. p. 193.

that the biliary ducts are open, and that the bile is not in that viscid and impacted state which is described in the dissections of Dr. Mitchel*. A distressing pain in the stomach, called by Dr. Cullen gastrodynia, attended in two instances. A burning pain in the stomach, and a soreness to the touch of its whole external region, occurred in three or four cases. Two of them were in March, 1795. In Mrs. Vogles, who had the fever in September, 1794, the sensibility of the pit of the stomach was so exquisite, that she could not bear the weight of a sheet upon it.

Pains in the bowels were very common. They formed the true bilious colic, so often mentioned by West-India writers. In John Madge these pains produced a hardness and contraction of the whole external region of the bowels. They were periodical in Miss Nancy Eyre, and in Mrs. Gardiner, and in both cases were attended with diarrhœa.

Costiveness without pain was common, and, in some cases, so extremely obstinate as to resist, for several days, the successive and alternated use of all the usual purges of the shops.

* Account of the Yellow Fever of 1793.

Flatulency was less common in this fever than in the year 1793.

The disease appeared with symptoms of dysentery in several cases.

IV. The following is an account of the state of the *secretions* and *excretions* in this fever.

A puking of bile was more common this year than in the year 1793. It was generally of a green or yellow colour. I have remarked before, that two of my patients discharged black bile within an hour after they were affected by the fever, and many discharged that kind of matter which has been compared to coffee grounds, towards the close of the disease.

The fæces were black in most cases where the symptoms of the highest grade of the fever attended. In one very malignant case the most drastic purges brought away, by fifty evacuations, nothing but natural stools. The purges were continued, and finally black fæces were discharged, which produced immediate relief*. In one person the fæces

* In the account of the effects of morbid action and inflammation, in the Outlines of the Theory of Fever, the author neglected to mention the change of certain fluids from

were of a light colour. In this patient the yellowness in the face was of an orange colour, and continued so for several weeks after his recovery.

The urine was, in most cases, high coloured. It was scanty in quantity in Peter Brown, and totally suppressed in John Madge for two days. I ascribed this defect of natural action in the kidneys to an *engorgement* in their blood-vessels, similar to that which takes place in the lungs and brain in this fever. I had for some time entertained this idea of a morbid affection of the kidneys, but I have lately been confirmed in it by the account which Dr. Chisholm gives of the state of one of the kidneys, in a man whom he lost with the Beullam fever, at Grenada. "The right kidney (says the doctor) was mortified, although, during his illness, no symptom of inflammation of that organ was perceived*." It would seem as if the want of

their natural to a dark colour. It appears in the secretions of the stomach and bowels, in the bile, in the urine, in carbuncles, and occasionally in the matter which is produced by blisters. All these changes occur in the yellow fever, and, in common with the other effects of fever that have been enumerated, are the result of peculiar actions in the vessels, derived from *one* cause, viz. morbid excitement.

* Essay on the Malignant Pestilential Fever introduced into the West-Indies from Beullam, p. 137.

action in the kidneys, and a defect in their functions were not necessarily attended with pain. I recollect to have met with several cases in 1793, in which there was a total absence of pain in a suppression of urine of several days continuance. The same observation is made by Dr. Chisholm, in his account of the Beullam fever of Grenada*. From this fact it seems probable, that pain is not the effect of any determinate state of animal fibres, but requires the concurrence of morbid or preternatural excitement to produce it. I met with but one case of strangury in this fever. It terminated favourably in a few days. I have never seen death, in a single instance, in a fever from any cause, where a strangury attended, and I have seldom seen a fatal issue to a fever, where this symptom was accidentally produced by a blister. From this fact there would seem to be a connection between a morbid excitement in the neck of the bladder, and the safety of more vital parts of the body. The idea of this connection was first suggested to me, above thirty years ago, by the late Dr. James Leiper, of Maryland, who informed me, that he had sometimes cured the most dangerous cases of pleurisy, after the usual remedies had failed, by exciting a

* Page 224.

strangury, by means of the tincture of Spanish flies mixed with camphorated spirit of wine.

The tongue was always moist in the beginning of the fever, but it was generally of a darker colour than last year. When the disease was left to itself, or treated with bark and wine, the tongue became of a fiery red colour, or dry and furrowed, as in the typhus fever.

Sweats were more common in the remissions of this fever, than they were in the year 1793, but they seldom terminated the disease. During the course of the sweats, I observed a deadly coldness over the whole body to continue in several instances, but without any danger or inconvenience to the patient. In two of the worst cases I attended, there were remissions, but no sweats until the day on which the fever terminated. In several of my patients, the fever wore away without the least moisture on the skin. The *milk*, in one case, was of a greenish colour, such as sometimes appears in the serum of the blood. In another female patient who gave suck, there was no diminution in the quantity of her milk during the whole time of her fever, nor did her infant suffer the least injury from sucking her breasts.

I observed tears to flow from the eye of a young woman in this fever, at a time when her mind seemed free from distress of every kind.

V. I proceed next to mention the symptoms of this fever in the nervous system.

Delirium was less common than last year. I was much struck in observing John Madge, who had retained his reason while he was so ill as to require three bleedings a day, to become delirious as soon as he began to recover, at which time his pulse rose from between 60 and 70, to 96 strokes in a minute. I saw one case of extreme danger, in which a hysterical laughing and weeping alternately attended.

I have before mentioned the frequency of mania as a symptom of this disease. An obstinate wakefulness attended the convalescence from this fever in Peter Brown, John Madge, and Mr. Cole.

Fainting was more common in this fever than in the fever of 1793. It ushered in the disease in one of my patients, and it occurred in several instances after bleeding, where the quantity of blood drawn was very moderate.

Several people complained of giddiness in the first attack of the fever, before they were confined to their beds. Sighing was less common, but a hiccup was more so, than in the year before.

John Madge had an immobility in his limbs bordering upon palsy. A weakness in the wrists in one case succeeded a violent attack of the fever.

Peter Brown complained of a most acute pain in the muscles of one of his legs. It afterwards became so much inflamed as to require external applications to prevent the inflammation terminating in an abscess. Mrs. Mitchell complained of severe cramps in her legs.

The sensations of pain in this fever were often expressed in extravagant language. The pain in the head, in a particular manner, was compared to repeated strokes of a hammer upon the brain, and in two cases, in which this pain was accompanied by great heat, it was compared to the boiling of a pot.

The more the pains were confined to the bones and back, the less danger was to be apprehended from the disease. I saw no case of death from the

yellow fever in 1793, where the patient complained much of pain in the back. It is easy to conceive how this external determination of morbid action should preserve more vital parts. The bilious fever of 1780 was a harmless disease, only because it spent its whole force chiefly upon the limbs. This was so generally the case, that it acquired, from the pains in the bones which accompanied it, the name of the "break bone fever." Hippocrates has remarked that pains which descend, in a fever, are more favourable than those which ascend*. This is probably true, but I did not observe any such peculiarity in the translation of pain in this fever. The following fact from Dr. Grainger will add weight to the above observations. He observed the pains in a malignant fever which were diffused through the whole head, though excruciating, were much less dangerous than when they were confined to the temples or forehead†.

I saw two cases in which a locked jaw attended. In one of them it occurred only during one paroxysm of the fever. In both it yielded in half an hour to blood-letting. I met with one case in

* Epidemics, book ii. sect. 2.

† Historia Febris Anomalæ Batavæ Annorum 1746, 1747, 1748, cap. i.

which there was universal tetanus. I should have suspected this to have been the primary disease, had not two persons been infected in the same house with the yellow fever.

The countenance sometimes put on a ghastly appearance in the height of a paroxysm of the fever. The face of a lady, admired when in health for uncommon beauty, was so much distorted by the commotions of her whole system, in a fit of the fever, as to be viewed with horror by all her friends.

VI. The senses and appetites were affected in this fever in the following manner.

A total blindness occurred in two persons during the exacerbation of the fever, and ceased during its remissions. A great intolerance of light occurred in several cases. It was most observable in John Madge during his convalescence.

A soreness in the sense of touch was so exquisite in Mrs. Kapper, about the crisis of her fever, that the pressure of a piece of fine muslin upon her skin gave her pain.

Peter Brown, with great heat in his skin, and a quick pulse, had no thirst, but a most intense de-

gree of thirst was very common in this fever. It produced the same extravagance of expression that I formerly said was produced by pain. One of my patients, Mr. Cole, said he "could drink up the ocean." I did not observe thirst to be connected with any peculiar state of the pulse.

George Eyre and Henry Clymer had an unusual degree of appetite, just before the usual time of the return of a paroxysm of fever.

A young man complained to me of being afflicted with nocturnal emissions of seed during his convalescence. This symptom is not a new one in malignant fevers. Hippocrates takes notice of it*. I met with one instance of it among the sporadic cases of yellow fever which occurred in 1795. It sometimes occurs, according to Lomius, in the commotions of the whole system which take place in epilepsy.

VII. The disease made an impression upon the lymphatic system. Four of my patients had glandular swellings: two of them were in the groin; a third was in the parotid; and the fourth was in the

* Epidemics, book IV.

maxillary glands. Two of these swellings suppurated.

VIII. The yellowness of the skin, which sometimes attends this fever, was more universal, but more faint than in the year 1793. It was, in many cases, composed of such a mixture of colours, as to resemble polished mahogany. But, in a few cases, the yellowness was of a deep orange colour. The former went off with the fever, but the latter often continued for several weeks after the patients recovered. In some instances a red colour predominated to such a degree in the face, as to produce an appearance of inflammation.

In Mrs. Vogles a yellowness appeared in her eyes during the paroxysm of her fever, and went off in its remissions.

In James Lefferty the yellowness affected every part of his body, except his hands, which were as pale as in a common fever.

Peter Brown tinged his sheets of a yellow colour, by night sweats, many weeks after his recovery.

There was an exudation from the soles of the feet of Richard Wells's maid, which tinged a towel of a yellow colour.

In my Account of the Yellow Fever of 1793, I ascribed the yellow colour of the skin wholly to a mixture of bile with the blood. I believe that this is the cause of it, in those cases where the colour is deep, and endures for several weeks beyond the crisis of the fever; but where it is transitory, and, above all, where it is local, or appears only for a few hours, during the paroxysm of the fever, it appears probable that it is connected with the mode of aggregation of the blood, and that it is produced wholly by some peculiar action in the blood-vessels. A similar colour takes place from the bite of certain animals, and from contusions of the skin, in neither of which cases has a suspicion been entertained of an absorption or mixture of bile with the blood.

A troublesome itching, with an eruption of red blotches on the skin, attended on the first day of the attack of the fever, in Mrs. Gardiner.

A roughness of the skin, and a disposition in it to peel off, appeared about the crisis of the fever, in Miss Sally Eyre.

That species of eruption, which I have elsewhere compared to moscheto bites, appeared in Mrs. Sellers.

John Ray, a day labourer, to whom I was called in the last stage of the fever, had petechiæ on his breast the day before he died.

That burning heat on the skin, called by the ancients "calor mordens," and from which this fever, in some countries, has derived the name of *causus*, was more common this year than last. It was sometimes local, and sometimes general. I perceived it in an exquisite degree in the cheeks only of Miss Sally Eyre, and over the whole body of John Ray. It had no connection with the rapidity or force of the circulation of the blood in the latter instance, for it was most intense at a time when he had no pulse.

It is remarkable that the heat of the skin has no connection with the state of the pulse. This fact did not escape Dr. Chisholm. He says he found the skin to be warm while the pulse was at 52, and that it was sometimes disagreeably cold when the pulse was as quick as in ordinary fever*.

* Page 117.

IX. I have in another place rejected putrefaction from the blood as the cause or effect of this fever. I shall mention the changes which were induced in its appearances when I come to treat of the method of cure.

Having described the symptoms of this fever as they appeared in different parts of the body, I shall now add a few observations upon its type or general character.

I shall begin this part of the history of the fever by remarking, that we had but one reigning disease in town during the autumn and winter; that this was a bilious remitting, or intermitting, and sometimes a yellow fever; and that all the fevers from other remote causes than putrid exhalation, partook more or less of the symptoms of the prevailing epidemic. As well might we distinguish the rain which falls in gentle showers in Great-Britain, from that which is poured in torrents from the clouds in the West-Indies, by different names and qualities, as impose specific names and characters upon the different states of bilious fever.

The forms in which this fever appeared were as follow.

1. A tertian fever. Several persons died of the third fit of tertians, who were so well as to go abroad on the intermediate day of the fever. It is no new thing for malignant fevers to put on the form of a tertian. Hippocrates long ago remarked, that intermittents sometimes degenerate into malignant acute diseases; and hence he advises physicians to be on their guard upon the 5th, 7th, 9th, and even on the 14th day of such fevers*.

2. It appeared most frequently in the form of a remittent. The exacerbations occurred most commonly in the evening. In some there were exacerbations in the morning as well as in the evening. But I met with several patients who appeared to be better and worse half a dozen times in a day. In each of these cases, there were evident remissions and exacerbations of the fever.

It assumed, in several instances, the symptoms of a colic and cholera morbus. In one case the fever, after the colic was cured, ended in a regular intermittent. In another, the colic was accompanied by a hæmorrhage from the nose. I distinguished this bilious colic from that which is excited by lighter causes, by its always coming on with

* De Morb. Popular. lib. VII.

more or less of a chilliness*. The symptoms of colic and cholera morbus occurred most frequently in June and July.

4. It appeared in the form of a dysentery in a boy of William Corfield, and in a man whom my pupil, Mr. Alexander, visited in the neighbourhood of Harrowgate.

5. It appeared, in one case, in the form of an apoplexy.

6. It disguised itself in the form of madness.

7. During the month of November, and in all the winter months, it was accompanied with pains in the sides and breast, constituting what nosologists call the "pleuritis biliosa."

8. The puerperile fever was accompanied, during the summer and autumn, with more violent symptoms than usual. Dr. Physick informed me, that two women, to whom he was called soon after their delivery, died of uterine hæmorrhages; and that he had with difficulty recovered two other lying-in women, who were afflicted with that symptom of a malignant diathesis in the blood-vessels.

* See Sydenham, vol. I. p. 212.

9. Even dropsies partook more or less of the inflammatory and bilious character of this fever.

10. It blended itself with the scarlatina. The blood, in this disease, and in the puerperile fever, had exactly the same appearance that it had in the yellow fever. A yellowness in the eyes accompanied the latter disease in one case that came under my notice.

A slight shivering ushered in the fever in several instances. But the worst cases I saw came on without a chilly fit, or the least sense of coldness in any part of the body.

Such was the predominance of the intermitting, remitting, and bilious fever, that the measles, the small-pox, and even the gout itself, partook more or less of its character. There were several instances in which the measles, and one in which the gout appeared with quotidian exacerbations; and two in which madness appeared regularly in the form of a tertian.

I mentioned formerly that this fever sometimes went off with a sweat, when it appeared in a tertian form. This was always the case with the second grade of the fever, but never with the first degree

of it, before the third or fourth paroxysm; nor did a sweat occur on the fifth or seventh day, except after the use of depleting remedies. This peculiarity in the fever of this year was so fixed, that it gave occasion for my comparing it, in my intercourse with my patients, to a lion on the first seven days, and to a lamb during the remaining part of its duration.

The fever differed from the fever of the preceding year in an important particular. I saw or heard of no case which terminated in death on the first or third day. In every case, the fever came on fraught with paroxysms. The moderate degrees of it were of so chronic a nature as to continue for several weeks, when left to themselves. I wish this peculiarity in the epidemic which I am now describing to be remembered; for it will serve hereafter to explain the reason why a treatment apparently different should be alike successful, in different seasons and in different countries.

The crisis of the fever occurred on uneven days more frequently than in the fever of the year 1793.

I remarked formerly* that remissions were more common in the yellow fever than in the common

* Account of the Yellow Fever of 1793.

bilious fever. The same observation applies to critical days. They were observable in almost every case in which the disease was not strangled in its birth. Dr. Chisholm describes the same peculiarity in the Beullam fever. "I have not met with any disease (says the doctor) in which the periods were more accurately ascertained*."

In addition to the instances formerly enumerated†, of the predominance of powerful epidemics over other diseases, I shall add two more, which I have lately met with in the course of my reading.

Dr. Chisholm, in describing the pestilential fever introduced into the West-Indies from Beullam, has the following remarks. "Most other diseases degenerated into, or partook very much of this. Dysenteries suddenly stopped, and were immediately succeeded by the symptoms of the pestilential fever. Catarrhal complaints, simple at first, soon changed their nature; convalescents from other diseases were very subject to this, but it generally proved mild. Those labouring at the same time under chronic complaints, particularly rheumatism and hepatitis, were very subject to it. The

* Page 141.

† Account of the Yellow Fever in 1793.

puerperile fever became malignant, and of course fatal; and even pregnant negro women, who otherwise might have had it in the usual mild degree peculiar to that description of people, were reduced to a very dangerous situation by it. In short, every disease in which the patient was liable to infection, sooner or later assumed the appearance, and acquired the danger of the pestilential fever*."

Dr. Desportes ascribes the same universal empire to the yellow fever which prevailed in St. Domingo, in the summer of 1733. "The fever of Siam (says the doctor) conveyed an infinite number of men to the grave, in a short time; but I saw but one woman who was attacked by it." "The violence of this disease was such, that it subjected all other diseases, and reigned alone. This is the character of all contagious and pestilential diseases. Sydenham, and before him Diemerbroek, have remarked this of the plague†."

In Baltimore, the small-pox in the natural way was attended with unusual malignity and mortality, occasioned by its being combined with the reigning yellow fever.

* Page 129, 130.

† Page 40, 41. See also p. 111, 230, 231. vol. I.

It has been urged as an objection to the influence of powerful epidemics chasing away, or blending with fevers of inferior force, that the measles sometimes supplant the small-pox, and mild intermittents take the place of fevers of great malignity. This fact did not escape the microscopic eye of Dr. Sydenham, nor is it difficult to explain the cause of it. It is well known that epidemics, like simple fevers, are most violent at their first appearance, and that they gradually lose their force as they disappear; now it is in their evanescent and feeble state, that they are jostled out of their order of danger or force, and yield to the youthful strength of epidemics, more feeble under equal circumstances of age than themselves. It would seem, from this fact, that an inflammatory constitution of the air, and powerful epidemics, both in their aggregate and individual forms, possessed a common character. They all invade with the fury of a savage, and retire with the gentleness of a civilized foe.

It is agreeable to discover from these facts and observations, that epidemic diseases, however irregular they appear at first sight, are all subject to certain laws, and partake of the order and harmony of the universe.

The action of the miasmata upon the body, when, from the absence of an exciting cause, they did not produce fever, was the same as I have elsewhere described. The sensations which I experienced, in entering a small room where a person was confined with this fever, were so exactly the same with those I felt the year before, that I think I could have distinguished the presence of the disease without the assistance of my eyes, or without asking a single question. After sitting a few minutes in a sick room, I became languid and fainty. Weakness and chilliness followed every visit I paid to a gentleman at Mr. Oellers's hotel, which continued for half an hour. A burning in my stomach, great heaviness, and a slight inflammation in my eyes, with a constant discharge of a watery humour from them for two days, succeeded the first visit I paid to Mrs. Sellers. These symptoms came on in less than ten minutes after I left her room. They were probably excited thus early, and in the degree which I have mentioned, by my having received her breath in my face by inspecting her tonsils, which were ulcerated on the first attack of the fever. I formerly supposed these changes in my body were proofs of the contagious nature of the yellow fever, but I shall hereafter explain them upon other principles.

I recollect having more than once perceived a smell which had been familiar to me during the prevalence of the yellow fever in 1793. It resembled the smell of liver of sulphur. I suspected for a while that it arose from the exhalations of the gutters of the city. But an accident taught me that it was produced by the perspiration of my body. Upon rubbing my hands, this odour was increased so as to become not only more perceptible to myself, but in the most sensible degree to my pupil, Mr. Otto. From this fact, I was convinced that I was strongly impregnated with miasmata, and I was led by it to live chiefly upon vegetables, to drink no wine, and to avoid, with double care, all the usual exciting causes of fever.

There was another mark by which I distinguished the presence of the seeds of this fever in my system, and that was, wine imparted a burning sensation to my tongue and throat, such as is felt after it has been taken in excess, or in the beginning of a fever. Several persons, who were exposed to the miasmata, informed me that wine, even in the smallest quantity, affected them exactly in the same manner.

I attended four persons in this fever who had had it the year before.

It remains now that I mention the origin of this fever. This was very evident. It was produced by the exhalations from the gutters, and the stagnating ponds of water in the neighbourhood of the city. Where there was most exhalation, there were most persons affected by the fever. Hence the poor people, who generally live in the neighbourhood of the ponds in the suburbs, were the greatest sufferers by it. Four persons had the fever in Spruce, between Fourth and Fifth-streets, in which part of the city the smell from the gutters was extremely offensive every evening. In Water-street, between Market and Walnut-streets, many persons had the fever: now the filth of that confined part of the city is well known to every citizen.

I have before remarked, that one reason why most of our physicians refused to admit the presence of the yellow fever in the city, was because they could not fix upon a vestige of its being imported. On the 25th of August, the brig Commerce arrived in the river, from St. Mark, commanded by Captain Shirtliff. After lying five days at the fort, she came up to the city. A boy, who had been shut out from his lodgings, went, in a state of intoxication, and slept on her deck, exposed to the night air, in consequence of which the fever was excited in him. This event gave occasion, for a few days,

to a report that the disease was imported, and several of the physicians, who had neglected to attend to all the circumstances that have been stated, admitted the yellow fever to be in town. An investigation of this supposed origin of the disease soon discovered that it had no foundation. At the time of the arrival of this ship, I had attended nearly thirty persons with the fever, and upwards of a hundred had had it, under the care of other physicians.

The generation of the yellow fever in our city was rendered more certain by the prevalence of bilious diseases in every part of the United States, and, in several of them, in the grade of yellow fever. It was common in Charleston, in South-Carolina, where it carried off many people, and where no suspicion was entertained of its being of West-India origin. It prevailed with great mortality at that part of the city of Baltimore, which is known by the name of Fell's Point, where, Dr. Drysdale assures me, it was evidently generated. A few sporadic cases of it occurred in New-York, which were produced by the morbid exhalation from the docks of that city. Sporadic cases of it occurred likewise in most of the states, in which the proofs of its being generated were obvious to common observation; and where the symptoms of depressed pulse, yellowness of the skin, and black discharges from the

bowels and stomach (symptoms which mark the highest grade of bilious remitting fever) did not occur, the fevers in all their form of tertian, quotidian, colic, and dysentery, were uncommonly obstinate or fatal in every state in the union. In New-Haven only, where the yellow fever was epidemic, it was said to have been imported from Martinique, but this opinion was proved to be erroneous by unanswerable documents, published afterwards in the Medical Repository, by Dr. Elisha Smith, of New-York.

The year 1795 furnished several melancholy proofs of the American origin of the yellow fever. All the physicians and citizens of New-York and Norfolk agree in its having been generated in their respective cities that year. It prevailed with great mortality at the same time in the neighbourhood of the lakes, and on the waters of the Genesee river, in the state of New-York. From its situation it obtained the name of the lake and Genesee fever. It was so general, in some parts of that new country, as to affect horses.

Thus have I endeavoured to fix the predisposing and remote causes of the yellow fever in our country. The remote cause is sometimes so powerful as to become an exciting cause of the disease, but

in general both the predisposing and remote causes are harmless in the system, until they are roused into action by some exciting cause.

I shall conclude this account of the symptoms and origin of the yellow fever by relating two facts, which serious and contemplating minds will apply to a more interesting subject.

1. Notwithstanding the numerous proofs of the prevalence of the yellow fever in Philadelphia in the year 1794, which have been mentioned, there are many thousands of our citizens, and a majority of our physicians, who do not believe that a case of it existed at that time in the city; nor is a single record of it to be met with in any of the newspapers, or other public documents of that year. Let us learn from this fact, that the denial of events, or a general silence upon the subject of them, is no refutation of their truth, where they oppose the pride or interests of the learned, or the great.

2. Notwithstanding the general denial of the existence of the yellow fever in Philadelphia, and the silence observed by our newspapers relative to it in 1794, there was scarcely a citizen or physician who, three years afterwards, did not admit of its having prevailed in that year. We learn from this

fact another important truth, that departed vice and error have no friends nor advocates.

OF THE METHOD OF CURE.

THE remedies employed for the cure of this fever were the same that I employed the year before. I shall only relate such effects of them as tend more fully to establish the practice adopted in the year 1793, and such as escaped my notice in my former remarks upon those remedies. My method of cure consisted,

I. In the abstraction of the stimulus of blood and heat from the whole body, and of bile and other acrid humours from the bowels, by means of the following remedies :

1. Bleeding.

2. Purging.

3. Cool air and cold drinks.

4. Cold water applied to the external parts of the body, and to the bowels by means of glysters.

II. In creating a diversion of congestion, inflammation, and serous effusion, from the brain and viscera to the mouth, by means of a salivation, and to the external parts of the body, by means of blisters.

III. In restoring the strength of the system, by tonic remedies.

I proceed to make a few remarks upon the remedies set down under each of the above heads.

I. I have taken notice that this fever differed from the fever of 1793, in coming forward in July and August with a number of paroxysms, which refused to yield to purging alone. I therefore began the cure of every case I was called to by *bleeding*.

I shall mention the effects of this remedy, and the circumstances, manner, and degrees in which I used it occasionally, in this fever, in my Defence of Blood-letting. Under the present head I shall only furnish the reader with a table of the quantity of

blood drawn from a number of my patients in the course of the disease. From several of them the quantity set down was taken in three, four, and five days. I shall afterwards describe the appearances of the blood.

Month.	Patients.	Quantity. ounces.	Number of times bled.
August.	Peter Denham	50	5
	Mrs. Bruce	70	7
	Andrew Gribble, aged 15 years.	50	5
	John Madge	150	12
	Peter Brown	80	8
September.	Mrs. Gardiner	80	7
	Miss Sally Eyre	80	9
	Mrs. Gass	50	3
	Richard Wells's maid	100	10
	Mr. Norval	100	9
	Mr. Harrison	90	9
	Henry Clymer	80	8
October.	Mrs. Mitchell	120	13
	Mrs. Lenox	80	7
	Mrs. Kapper	140	11
	Rev. Dr. Magaw's maid	100	10
	Miss Hood	100	10
	Mrs. Vogles	70	5
1795	Guy Stone	100	9
January.	Benj. Hancock	100	10
	Mr. Benton	130	13
	Mrs. Fries	150	15
	Mrs. Garrigues	80	7

Three of the women, whose names I have mentioned, were in the advanced stage of pregnancy, viz. Mrs. Gardiner, Mrs. Gass, and Mrs. Garrigues. They have all since borne healthy children. I have omitted the names of above one hundred persons who had the fever, from whom I drew thirty or forty ounces of blood, by two or three bleedings. I did not cure a single person without at least one bleeding.

It is only by contemplating the extent in which it is necessary to use this remedy, in order to overcome a yellow fever, that we can acquire just ideas of its force. Hitherto this force has been estimated by no other measure than the grave, and this, we know, puts the strength of all diseases upon a level.

The blood drawn in this fever exhibited the following appearances:

1. It was dissolved in a few instances.

2. The crassamentum of the blood was so partially dissolved in the serum, as to produce an appearance in the serum resembling the washings of flesh in water.

3. The serum was so lightly tinged of a *red* colour as to be perfectly transparent.

4. The serum was, in many cases, of a deep yellow colour.

5. There was, in every case in which the blood was not dissolved, or in which the second appearance that has been mentioned did not take place, a beautiful scarlet-coloured sediment in the bottom of the bowl, forming lines, or a large circle. It seemed to be a tendency of the blood to dissolution. This state of the blood occurred in almost all the diseases of the last two years, and in some in which there was not the least suspicion of the miasmata of the yellow fever.

6. The crassamentum generally floated in the serum, but it sometimes sunk to the bottom of the bowl. In the latter case the serum had a muddy appearance.

7. I saw but one case in which there was not a separation of the crassamentum and serum of the blood. Its colour in this case was of a deep scarlet. In the year 1793 this appearance was very common.

8. I saw one case in which the blood drawn, amounting to 14 ounces, separated partially, and was of a deep *black* colour. This blood was taken from Mr. Norval, a citizen of North-Carolina.

9. There was, in several instances, a transparent jelly-like pellicle which covered the crassamentum of the blood, and which was easily separated from it without altering its texture. It appeared to have no connection with the blood.

10. The blood, towards the crisis of the fever in many people, exhibited the usual forms of inflammatory crust. It was cupped in many instances.

11. After the loss of 70 or 80 ounces of blood there was an evident disproportion of the quantity of crassamentum to the serum. It was sometimes less, by one half, than in the first bleedings.

Under this head it will be proper to mention that the blood, when it happened to flow along the external part of the arm in falling into the bowl, was so warm as to excite an unpleasant sensation of heat in several patients.

To the appearances exhibited by the blood to the eye, I shall add a fact communicated to me by

a German bleeder, who followed his business in the city during the prevalence of the fever in 1793. He informed me that he could distinguish a yellow fever from all other states of fever, by a peculiar smell which the blood emitted while it was flowing from a vein. From the certainty of his decision in one case which came under my notice, before a suspicion had taken place of the fever being in the city, I am disposed to believe that there is a foundation for his remark.

II. I have but little to add to the remarks I made upon the use of *purging* in the year 1793. I gave jalap, calomel, and gamboge until I obtained large and dark-coloured stools; after which I kept the bowels gently open every day with castor oil, cremor tartar, or glauber's salts. I gave calomel in much larger quantities than I did the year before. John Madge took nearly 150 grains of it in six days. I should have thought this a large quantity, had I not since read that Dr. Chisholm gave 400 grains of it to one patient in the course of his fever, and 50 grains to another at a single dose, three times a day. I found strong mercurial purges to be extremely useful in the winter months, when the fever put on symptoms of pleurisy. I am not singular in ascribing much to the efficacy of purges in the bilious pleurisy. Dr. Desportes tells us

that he found the pleurisy of St. Domingo, which was of the bilious kind, to end happily in proportion as the bowels were kept constantly open*. Nor am I singular in keeping my eye upon the original type of a disease, which only changes its symptoms with the weather or the season, and in treating it with the same remedies. Dr. Sydenham bled as freely in the diarrhœa of 1668 as he had done in the inflammatory fever of the preceding year†. How long the pleurisies of winter, in the city of Philadelphia, may continue to retain the bilious symptoms of autumn, which they have assumed for three years past, I know not; but the late Dr. Faysseaux, of South-Carolina, informed me, that for many years he had not seen a pleurisy in Charleston with the common inflammatory symptoms which characterised that disease when he was a student of medicine. They all now put on bilious symptoms, and require strong purges to cure them. The pleurisies which the late Dr. Chalmers supposes he cured by purging were probably nothing but bilious fevers, in which the cool weather had excited some pleuritic symptoms.

* Page 140.

† Wallis's edition, p. 211. vol. i.

I have nothing to add to the remarks I have elsewhere published upon the efficacy of *cool air* and *cold drinks* in this fever. They were both equally pleasant and useful, and contributed, with cleanliness, very much to the success of my practice.

4. *Cold water*, applied to the external parts of the body, and injected into the bowels by way of glyster, did great service in many cases. John Madge found great relief from cloths dipped in cold water, and applied to the lower part of his belly. They eased a pain in his bowels, and procured a discharge of urine. A throbbing and most distressing pain in the head was relieved by the same remedy, in Mrs. Vogles and Mrs. Lenox. The cloths were applied for three successive days and nights to Mrs. Lenox's head, during an inflammation of her brain, which succeeded her fever, and were changed, during the greater part of the time, every ten or fifteen minutes. In 1795, I increased the coldness of pump water, when used in this way, by dissolving ice in it, and in some cases I applied powdered ice in a bladder to the head, with great advantage.

The following facts will show the good effects of cold water in this, as well as other fevers of too much action.

In the afternoon of one of those days in which my system was impregnated with the miasmata of the yellow fever, I felt so much indisposed that I deliberated whether I should go to bed or visit a patient about a mile in the country. The afternoon was cool and rainy. I recollected, at this time, a case related by Dr. Daignan, a French physician, of a man who was cured of the plague, by being forced to lie all night in an open field, in a shower of rain. I got into my chair, and exposed myself to the rain. It was extremely grateful to my feelings. In two hours I returned, when, to my great satisfaction, I found all my feverish symptoms had left me, nor had I the least return of them afterwards.

Dr. Caldwell, who acted as a surgeon of a regiment, in the expedition against the insurgents in the western counties of Pennsylvania, furnished me, in a letter dated from Bedford, October 20th, 1794, with an account of his having been cured of a fever, by a more copious use of the same remedy. "I was (says the doctor), to use a vulgar expression, *wet to the skin*, and had no opportunity of shifting my clothes for several hours. In consequence of this thorough bathing, and my subsequent exposure to a cool air, I was relieved from every symptom of indisposition in a few hours, and have

enjoyed more than my usual stock of health ever since."

The efficacy of cold water, in preventing and curing inflammation, may be conceived from its effects when used with mud or clay, for obviating the pain and inflammation which arise from the sting of venomous insects. The same remedy, applied for half an hour, has lately, it is said, been equally effectual in preventing the deleterious effects of the bite of a rattle-snake.

II. The good effects I had observed from a *salivation* in the yellow fever of 1793, induced me to excite it as early as possible, in all those cases which did not yield immediately to bleeding and purging. I was delighted with its effects in every case in which it took place. These effects were as follow:

1. It immediately attracted and concentrated in the mouth all the scattered pains of every part of the body.

2. It checked a nausea and vomiting.

3. It gradually, when it was copious, reduced the pulse, and thereby prevented the necessity of further bleeding or purging.

I wish it were possible to render the use of this remedy universal in the treatment of malignant fevers. Dr. Chisholm, in his account of the Boullam fever, has done much to establish its safety and efficacy. It is a rare occurrence for a patient that has been sufficiently bled and purged, to die after a salivation takes place. The artificial disease excited by the mercury suspends or destroys disease in every part of the body. The occasional inconveniences which attend it are not to be named with its certain and universal advantages. During the whole of the season in which the yellow fever prevailed, I saw but two instances in which it probably loosened or destroyed the teeth. I am not certain that the mercury was the cause of the injury or loss of those teeth; for who has not seen malignant fevers terminate in ulcers, which have ended in the erosions of bony parts of the body?

It has been justly remarked, that there can be but one action at a time in the blood-vessels. This was frequently illustrated by the manner in which mercury acted upon the system in this fever. It seldom salivated until the fever intermitted or de-

clined. I saw several cases in which the salivation came on during the intermission, and went off during its exacerbation; and many, in which there was no salivation until the morbid action had ceased altogether in the blood-vessels, by the solution of the fever. It is because the action of the vessels, in epilepsy and pulmonary consumption, surpasses the stimulus of the mercury, that it is so difficult to excite a salivation in both those diseases.

Let not the advocates for the healing powers of nature complain of a salivation as an unnatural remedy in fevers. Dr. Sydenham speaks in high terms of it, in the fever of 1670, 1671, and 1672, in which cases it occurred spontaneously, and says that it cured it when it was so malignant as to be accompanied by purple spots on the body*.

Blisters, when applied at a *proper* time, did great service in this fever. This time was, when the fever was so much weakened by evacuations, that the artificial pain excited by the stimulus of the blisters destroyed, and, like a conductor, conveyed off all the natural pain of the body. It is from ignorance, or inattention to the proper stage of fevers in which blisters have been applied, that

* Vol. ii. p. 212.

there have been so many disputes among physicians respecting their efficacy. When applied in a state of great arterial action, they do harm; when applied after that action has nearly ceased, they do little or no service. I have called the period in which blisters are useful the *blistering point.* In bilious fevers this point is generally circumscribed within eight and forty hours.

The effects of blisters were as follow:

1. They concentrated, like a salivation, all the scattered pains of the body, and thereby,

2. Reduced the pulse in force and frequency.

3. They instantly checked a sickness at the stomach and vomiting.

4. They often induced a gentle moisture upon the skin.

I found it of little consequence to what part of the body the blisters were applied; for I observed a pain in the head, and even delirium, to be as speedily and certainly cured by blisters upon the wrists, as they were by a large blister to the neck.

III. After the reduction of the morbid action of the blood-vessels, by means of the remedies which have been mentioned, I seldom made use of any other tonic than a nourishing and gently stimulating diet. This consisted of summer fruits, bread and milk, chicken broth, the white meats, eggs, oysters, and malt liquors, more especially porter. I made many attempts to cure this fever when it appeared in the form of a simple intermittent, without malignant symptoms, by means of *bark*, but always, except in two instances, without success; and in them it did not take effect until after bleeding. In several cases it evidently did harm. I should have suspected my judgment in these observations respecting this medicine, had I not been assured by Dr. Griffitts, Dr. Physick, and Dr. Woodhouse, that it was equally ineffectual in their practice, in nearly all the cases in which they gave it, and even where blood-letting had been premised. Dr. Woodhouse saw a case in which near a pound of bark had been taken without effect; and another in which a fatal dropsy succeeded its use. Dr. Griffitts excepted, from his testimony against the bark, the cases of seven persons from the country, who brought the seeds of the intermitting fever with them to the city. In them the bark succeeded without previous bleeding. The facility with which these seven cases of intermitting fever

were cured by the bark, clearly proves that fevers of the same season differ very much, according to the nature of the exhalation which excites them. The intermittents in these strangers were excited by miasmata of less force than that which was generated in our city, in which, from the greater heat of the atmosphere, and the more heterogeneous nature of the putrid matters which stagnate in our ponds and gutters, the exhalation probably possesses a more active and stimulating quality. Thus the mild remittents in June, and in the beginning of July, which were produced by the usual filth of the streets of Philadelphia, in the year 1793, differed very much from the malignant remitting yellow fever which was produced by the stench of the putrid coffee a few weeks afterwards.

Sir John Pringle long ago taught the inefficacy of bark in certain bilious fevers. But Dr. Chisholm has done great service to medicine by recording its ill effects in the Boullam fever. "Headach (says the doctor), a heavy dull eye, with a considerable protrusion from its orbits, low spirits, thirst, and a total want of appetite, were the general consequences of the treatment with bark without the previous antiphlogistic."

I have mentioned a case of internal dropsy of the brain having been produced by the improper use of the bark, in a son of Mr. Coates. I have no doubt but this disease, as also palsy and consumption, obstructions of the liver and bowels, and dropsies of the belly and limbs, are often induced by the use of the bark, during an inflammatory state of the blood-vessels. It is to be lamented that the association of certain diseases and remedies, in the minds of physicians, becomes so fixed, as to refuse to yield to the influence of reason. Thus pain and opium, dropsy and foxglove, low spirits and assafœtida, and, above all, an intermitting fever and bark, are all connected together, in common practice, as mechanically as the candle and the snuffers are in the mind of an old and steady house servant. To abolish the mischief of these mechanical associations in medicine, it will be necessary for physicians to prescribe only for the different states of the system.

Finding the bark to be so universally ineffectual or hurtful, I substituted Columbo root, the Carribean bark, and several other bitters, in its place, but without success. They did less harm than the jesuit's bark, but they did not check the return of a single paroxysm of fever.

I know that bark was given in this fever in some instances in which the patients recovered; but they were subject, during the winter, and in the following spring, to frequent relapses, and, in some instances, to affections of the brain and lungs. In the highest grade of the fever it certainly accelerated a supposed putrefaction of the blood, and precipitated death. The practice of physicians who create this gangrenous state of fever by means of the bark, resembles the conduct of a horse, who attempts by pawing to remove his shadow in a stream of water, and thereby renders it so turbid that he is unable to drink it.

Should the immediate success of tonic and depleting remedies in destroying the fever be equal, the effects of the former upon the constitution cannot fail of being less safe than the latter remedies. They cure by overstraining the powers of life. There is the same difference, therefore, between the two modes of practice, that there is between gently lifting the latch of a door, and breaking it open in order to go into a house.

Wine was hurtful in every case of yellow fever in which it was given, while there were any remains of inflammatory action in the system. I recollect that a few spoonsful of it, which Mr. Harrison of

Virginia took in the depressed state of his pulse, excited a sensation in his stomach which he compared to a fire. Even wine-whey, in the excitable state of the system induced by this fever, was sometimes hurtful. In a patient of Dr. Physick, who was on the recovery, it produced a relapse that had nearly proved fatal, in the year 1795. Dr. Desperrieres ascribes the death of a patient to a small quantity of wine given to him by a black nurse*. These facts are important, inasmuch as wine is a medicine which patients are most apt to use in all cases, without the advice of a physician.

I observed *opium* to be less hurtful in this fever than it was in the fever of 1793. I administered a few drops of laudanum, in one case, in the form of a glyster, in a violent pain of the bowels, with evident advantage, before the inflammatory action of the blood-vessels was subdued. In this way I have often obtained the composing effects of laudanum where it has been rejected by the stomach. But I gave it sparingly, and in small doses only, in the early stage of the fever. John Madge, whose pains in his bowels were often as exquisite as they are in the most acute colic, did not take a single drop of it. I used no anodyne in his case but

* Vol. ii. p. 108.

bleeding, and applications of cold water to the inside and outside of his bowels. After the fever had passed the seventh day, and had been so far subdued by copious evacuations as to put on the form of a common inflammatory intermittent, I gave laudanum during the intermissions of the fever with great advantage. In some cases it suddenly checked the paroxysms of the fever, while in many more it only moderated them, but in such a manner that they wore themselves away in eight or ten days. One of my female patients, who had taken bitters of every kind without effect to cure a tertian, which succeeded a yellow fever, took a large dose of laudanum, in the interval of her paroxysms, to cure a tooth-ach. To her great surprise it removed her tertian. The effects of laudanum in this fever were very different from those of bark. Where it did no service it did not, like the bark, do any harm.

Perhaps this difference in the operation of those two medicines depended upon the bark acting with an astringent, as well as stimulating power, chiefly upon the blood-vessels, while the action of the opium was more simply stimulating, and diffused at the same time over all the systems of the body.

I shall say in another place that I sometimes directed a few drops of laudanum to be given in that state of extreme debility which succeeds a paroxysm of fever, with evident advantage.

Nitre, so useful in common inflammatory fevers, was in most cases so offensive to the stomach in this fever, that I was seldom able to give it. Where the stomach retained it I did not perceive it to do any service.

Antimonials were as ineffectual as nitre in abating the action of the sanguiferous system, and in producing a sweat. I should as soon expect to compose a storm by music, as to cure a yellow fever by such feeble remedies.

Thus have I finished the history of the symptoms, origin, and cure of the yellow fever as it appeared in Philadelphia in 1794, and in the winter of 1795. The efficacy of the remedies which have been mentioned was established by almost universal success. Out of upwards of 200 patients to whom I was called on the first stage of the fever, between the 12th of June, 1794, and the 1st of April, 1795, I lost but four persons, in whom the unequivocal symptoms had occurred, which characterize the first grade of the disease.

It will be useful, I hope, to relate the cases of the patients whom I lost, and to mention the causes of their deaths. The first of them was Mrs. Gavin. She objected to a fifth bleeding in the beginning of a paroxysm of her fever, and died from the want of it. Her death was ascribed to the frequency of her bleedings by the enemies of the depleting system. It was said that she had been bled ten times, owing to ten marks of a lancet having been discovered on her arms after death, five of which were occasioned by unsuccessful attempts to bleed her. She died with the usual symptoms of congestion in her brain.

Mr. Marr, to whom I was called on the first day of his disease, died in a paroxysm of his fever which came on in the middle of the seventh night, after six bleedings. I had left him, the night before, nearly free of fever, and in good spirits. He might probably have been saved (humanly speaking) by one more bleeding in the exacerbation of what appeared to be the critical paroxysm of his fever.

Mr. Montford, of the state of Georgia, died under the joint care of Dr. Physick and myself. He had been cured by plentiful bleeding and purging, but had relapsed. He appeared to expire in a fainty fit in the first stage of a paroxysm of the fever.

Death from this cause (which occurs most frequently where blood-letting is not used) is common in the yellow fever of the West-Indies. Dr. Bisset, in describing the different ways in which the disease terminates fatally, says, "In a few cases the patient is carried off by an *unexpected syncope**."

A servant of Mr. Henry Mitchel, to whom I was called in the early stage of his disease, died in consequence of a sudden effusion in his lungs, which had been weakened by a previous pulmonary complaint.

I wish the friends of bark and wine in the yellow fever, or of *moderate* bleeding with antimonial medicines, would publish an account of the number of their deaths by the fever, within the period I have mentioned, and with the same fidelity I have done. The contrast would for ever decide the controversy in favour of copious depletion. The mortality under the tonic mode of practice may easily be conceived from the acknowledgment of one of the gentlemen who used it, but who premised it, in many cases, by two and three bleedings. He informed Dr. Woodhouse, that out of twenty-seven patients, whom he had attended in the yellow fever,

* Medical Essays and Observations, p. 28.

he had saved but nine. Other practitioners were, I believe, equally unsuccessful, in proportion to the number of patients whom they attended. The reader will not admit of many deaths having occurred from the diseases (formerly enumerated) to which they were ascribed, when he recollects that even a single death from most of them, in common seasons, is a rare occurrence in the practice of regular bred physicians.

In answer to the account I have given of the mortality of the fever in 1794, it will be said, that 30 persons died less in that year, than in the healthy year of 1792. To account for this, it will be necessary to recollect that the inhabitants of Philadelphia were reduced in number upwards of 4000, in the year 1793, and of course that the proportion of deaths was greater in 1794 than it was in 1792, although the number was less. It is remarkable that the burials in the strangers' grave-yard amounted in the year 1792 to but 201, whereas in 1794 they were 676. From this it appears, that the deaths must have been very numerous among new comers (as they are sometimes called) in the year 1794, compared with common years. Now this will easily be accounted for, when we recollect that these people, who were chiefly labourers, were exposed to the constantly exciting causes of the disease, and

that, in all countries, they are the principal sufferers by it.

But in order to do justice to this comparative view of the mortality induced by the yellow fever in the year 1794, it will be necessary to examine the bill of mortality of the succeeding year. By this it appears that 2274 persons died in 1795, making 1139 more than died in 1794. The greatness of this mortality, I well recollect, surprized many of the citizens of Philadelphia, who had just passed an autumn which was not unusually sickly, and who had forgotten the uncommon mortality of the months of January, February, and March, which succeeded the autumn of 1794.

It will probably be asked, how it came to pass that I attended so many more patients in this fever than any of my brethren. To this I answer, that, since the year 1793, a great proportion of my patients have consisted of strangers, and of the poor; and as they are more exposed to the disease than other people, it follows, that of the persons affected by the fever, a greater proportion must have fallen to my share as patients, than to other physicians. My ability to attend a greater number of patients than most of my brethren, was facilitated by my having, at the time of the fever, several ingenious

and active pupils, who assisted me in visiting and prescribing for the sick. These pupils were, Ashton Alexander and Nathaniel Potter (now physicians at Baltimore), John Otto (now physician in Philadelphia), and Gilbert Watson (since dead of the yellow fever).

The antiphlogistic remedies were not successful in Philadelphia, in the yellow fever, in my hands alone. They were equally, and perhaps more so, in the hands of my friends Dr. Griffitts, Dr. Physick, Dr. Dewees, and Dr. Woodhouse.

They were moreover successful at the same time in New-Haven, Baltimore, and in Charleston, in South-Carolina. Eighteen out of twenty died of all who took bark and wine in New-Haven, but only one in ten of those who used the depleting medicines. In a letter from Dr. Brown, a physician of eminence in Baltimore, dated November 27th, 1794, he says, "of the many cases which fell to my care, two only proved mortal where I was called on the first day of the disease, and had an uncontrouled opportunity to follow my judgment. Where salivation took place, I had no case of mortality; and in two of those cases, a black vomiting occurred." Dr. Ramsay, of Charleston, in a letter to one of his friends in this city, dated October

14th, 1794, subscribes to the efficacy of the same practice in a fever which prevailed at that time in Charleston, and which, he says, resembled the yellow fever of Philadelphia in the year 1793.

But the success of the depleting system was not confined to the United States. In a letter before quoted, which I received from Dr. Davidson, of St. Vincents, dated July 22d, 1794, there is the following testimony in favour of evacuations from the blood-vessels, bowels, and salivary glands:

"Where the fever comes on with great determination to the head, and an affection of the stomach, in consequence of that determination, violent head-ach, redness of the eyes, turgescence of the face, impatience of light, &c. attended with a full and hard pulse, *blood-letting* should be employed *freely* and *repeatedly*, cold applications should be applied to the head, and purging medicines should be employed. As a purge, *calomel* has been used with the greatest advantage, sometimes by itself, but most frequently combined with some active purgative medicine, such as jalap. From some peculiarity in the disease, an uncommon quantity of the calomel is necessary to affect the bowels and salivary glands. As I found a small quantity of it did not produce the effect I

wished for promptly, I have gradually increased the quantity, until I now venture to give *ten* grains of it, combined with five of jalap, every *two* hours until stools are procured. The calomel is then given by itself.

" The patients have generally an aversion to wine. The bark is seldom found of much advantage in this state of the fever, and frequently brought on a return of the vomiting. I preferred to it, in a remission of the symptoms, a vinous infusion of the quassia, which sat better upon the stomach."

In the island of Jamaica, the depleting system has been divided. It appears, from several publications in the Kingston papers, that Dr. Grant had adopted blood-letting, while most of the physicians of the island rest the cure of the yellow fever upon strong mercurial purges. The ill effects of *moderate* bleeding probably threw the lancet into disrepute, for the balance of success, from those publications, is evidently in favour of simple purging. I have no doubt of the truth of the above statement of the controversy between the exclusive advocates for bleeding and purging; or perhaps the superior efficacy of the latter remedy may be explained in the following manner.

In warm climates, the yellow fever is generally, as it was in Philadelphia in the month of August and in the beginning of September, 1793, a disease of but two or three paroxysms. It is sometimes, I believe, only a simple ephemera. In these cases, purging alone is sufficient to reduce the system, without the aid of bleeding. It was found to be so until the beginning of September, in 1793, in most cases in Philadelphia. The great prostration of the system in the yellow fever, in warm weather and in hot climates, renders the restoration of it to a healthy state of action more gradual, and of course more safe, by means of purging than bleeding. The latter remedy does harm, from the system being below the point of re-action, after the pressure of the blood is taken from it, or by restoring the blood-vessels too suddenly to preternatural action, without reducing them afterwards. Had bleeding been practised agreeably to the method described by Riverius (mentioned in the history of the fever of 1793), or had the fever in Jamaica run on to more than four or five paroxysms, it is probable the loss of blood would have been not only safe, but generally beneficial. I have, in the same history, given my reasons why *moderate* bleeding in this, as well as many other diseases, does harm. In those cases where it has occurred in large quantities from natural hæmorrhages, it has always done

service in the West-Indies. The inefficacy, and, in some cases, the evils, of *moderate* blood-letting are not confined to the yellow fever. It is equally ineffectual, and, in some instances, equally hurtful, in apoplexy, internal dropsy of the brain, pleurisy, and pulmonary consumption. Where all the different states of the pulse which indicate the loss of blood are perfectly understood, and blood-letting conformed in *time* and in *quantity* to them, it never can do harm, in any disease. It is only when it is prescribed empirically, without the direction of just principles, that it has ever proved hurtful. Thus the fertilizing vapours of heaven, when they fall only in dew, or in profuse showers of rain, are either insufficient to promote vegetation, or altogether destructive to it.

There may be habits in which great and long protracted debility may have so far exhausted the active powers of the system, as to render bleeding altogether improper in this disease, in a West-India climate. Such habits are sometimes produced in soldiers and sailors, by the hardships of a military and naval life. Bleeding in such cases, Dr. Davidson assures me, in a letter dated from Martinique, February 29th, 1796, did no good. The cure was effected, under these circumstances, by purges, and large doses of calomel. But where

this chronic debility does not occur, bleeding, when properly used, can never be injurious, even in a tropical climate, in the yellow fever. Of this there are many proofs in the writings of the most respectable English and French physicians. In spite of the fears and clamours which have been lately excited against it in Jamaica, my late friend and contemporary at the college of Edinburgh, Dr. Broadbelt, in a letter from Spanish Town, dated January 6th, 1795, and my former pupil, Dr. Weston, in a letter from St. Ann's Bay, dated June 17th, 1795, both assure me, that they have used it in this fever with great success. Dr. Weston says that he bled "*copiously* three times in twenty-four hours, and thereby saved his patient."

The superior advantages of the North-American mode of treating the yellow fever, by means of *all* the common antiphlogistic remedies, will appear from comparing its success with that of the West-India physicians, under all the modes of practice which have been adopted in the islands. Dr. Desportes lost one half of all the patients he attended in the yellow fever in one season in St. Domingo*. His remedies were *moderate* bleeding and purging, and the copious use of diluting drinks. Dr. Bisset

* Vol. i. p. 55.

says, " the yellow fever is often under particular circumstances very fatal, carrying off four or five in seven whom it attacks, and sometimes, but seldom, it is so favourable as to carry off only one patient in five or six*." The doctor does not describe the practice under which this mortality takes place.

Dr. Home, I have elsewhere remarked†, lost " one out of four of his patients in Jamaica." His remedies were *moderate* bleeding and purging, and afterwards bark, wine, and external applications of blankets dipped in hot vinegar.

Dr. Blane pronounces the yellow fever to be " one of the most fatal diseases to which the human body is subject, and in which human art is the most unavailing." His remedies were bleeding, bark, blisters, acid drinks, saline draughts, and camomile tea.

Dr. Chisholm acknowledges that he lost one in twelve of all the patients he attended in the fever of Grenada. His principal remedy was a salivation. I shall hereafter show the inferiority of this single mode of depleting, to a combination of it with bleed-

* Medical Essays and Observations, p. 29.

† Account of the Yellow Fever of 1793.

ing and purging. In Philadelphia and Baltimore, where bleeding, purging, and salivation were used in due time, and after the manner that has been described, not more than one in fifty died of the yellow fever. It is probable that greater certainty and success in the treatment of this disease will not easily be attained, for idiosyncracy, and habits of intemperance which resist or divert the operation of the most proper remedies, a dread of the lancet, or the delay of an hour in the use of it, the partial application of that or any other remedy, the unexpected recurrence of a paroxysm of fever in the middle of the night, or the clandestine exhibition of wine or laudanum by friends or neighbours, often defeat the best concerted plans of cure by a physician. Heaven in this, as in other instances, kindly limits human power and benevolence, that in all situations man may remember his dependence upon the power and goodness of his Creator.

AN

ACCOUNT

OF

SPORADIC CASES

OF

BILIOUS YELLOW FEVER,

IN PHILADELPHIA,

IN THE YEARS 1795 AND 1796.

AN ACCOUNT, &c.

IN my account of the yellow fever, as it appeared in Philadelphia in the year 1794, I took notice of several cases of it which occurred in the spring of the year 1795. Before I proceed to deliver the history of this disease as it appeared in 1797, I shall mention the diseases and state of the weather which occurred during the remaining part of the year 1795, and the whole of the year 1796. This detail of facts, apparently uninteresting to the reader in the present state of our knowledge of epidemics, may possibly lead to principles at a future day.

The month of April, 1795, was wet and cold. All the diseases of this month partook of the inflammatory character of the preceding winter and autumn, except the measles, which were unusually mild.

The weather in May was alternately wet, cool, and warm. A few cases of malignant fever occurred this month, but with moderate symptoms. In June the weather was cool and pleasant. The measles put on more inflammatory symptoms than in the preceding months. I had two cases of mania under my care this month, and one of rheumatism, which were attended with intermissions and exacerbations every other day.

The weather on the 19th, 20th, 21st, and 22d days of July was very warm, the mercury being at 90° in Fahrenheit's thermometer. The fevers of this month were all accompanied with black discharges from the bowels. Mr. Kittera, one of the representatives of Pennsylvania in the congress of the United States, in consequence of great fatigue on a warm day, was affected with the usual symptoms of the yellow fever. During his illness he constantly complained of more pain in the left, than in the right side of his head. His pulse was more tense in his left, than in his right arm. During his convalescence, it was more quick in the left arm, than it was in the right. He was cured by a salivation and the loss of above 100 ounces of blood. His head-ach was relieved by the application of a bladder half filled with ice to his forehead.

Most of the cases of bilious fever, which came under my notice, were attended with quotidian, tertian, or quartan intermissions. In a few of my patients there was a universal rash.

Dr. Woodhouse informed me, that he had seen several instances in which the yellow fever appeared in the same place in which some soldiers had laboured under the dysentery. These facts show the unity of fever, and the impracticability of a nosological arrangement of diseases.

The cholera infantum was severe and fatal, in many instances, during this month. It yielded to blood-letting in a child of Mr. Conyngham, which was but four months old. In a child of seven weeks old which came under my care, I observed the coldness, chills, hot fits, and remissions of the bilious fever to be as distinctly marked as ever I had seen them in adult patients. In a child of Mr. Darrach, aged 5 months, the discharges from the bowels were of a black colour. I mention these facts in support of an opinion I formerly published, that the cholera infantum is a bilious fever, and that it rises and falls in its violence with the bilious fever of grown persons.

About the latter end of this month and the beginning of August, there were heavy showers of rain, which carried away fences, bridges, barns, mills, and dwelling-houses in many places. Several cases of bilious yellow fever occurred in the month of August. In one of them it was accompanied with that morbid affection in the wind-pipe which has been called cynanche trachealis. It was remarkable that sweating became a more frequent symptom of the fevers of this month than it had been in July. Hippocrates ascribes this change in the character of bilious fevers to rainy weather. Perhaps it was induced by the rain which fell in the beginning of the month, in the fevers which have been named.

Among the persons affected with the yellow fever during this month, was William Bradford, Esq. the attorney-general of the United States. From a dread of the lancet he objected to being bled in the early stage of his disease, in consequence of which he died on the 23d of August, in the 39th year of his age, amidst the tears of numerous friends, and the lamentations of his whole country.

On the 30th and 31st of August, there was a fall of rain, which suddenly checked the fever of the season, insomuch that the succeeding autumnal

months were uncommonly healthy. Several showers of rain had nearly the same effect in New-York, where this fever carried off, in a few weeks, above 700 persons. It prevailed, at the same time, and with great mortality, in the city of Norfolk, in Virginia.

In both those cities, as well as in Philadelphia, the disease was evidently derived from putrid exhalation.

In the same month, the dysentery prevailed in Newhaven, in Connecticut, and in the same part of the town in which the yellow fever had prevailed the year before. The latter disease was said to have been imported, but the prevalence of the dysentery, under the above circumstances, proved that both diseases were of domestic origin.

The fever, as it appeared in Philadelphia, yielded in most cases to depleting remedies. After purging and blood-letting, I gave bark, where the fever intermitted, with advantage. It was effectual only when given in large doses. In one instance, it induced a spitting of blood, which obliged me to lay it aside.

The winter of 1796 was uncommonly moderate. There fell a good deal of rain, but little snow. The navigation of the Delaware was stopped but two or three days during the whole season. Catarrhs were frequent, but very few violent or acute diseases occurred in my practice. The month of March and the first week in April were uncommonly dry. Several cases of malignant bilious fever came under my care during these months. A little girl, of five years old, whom I lost in this fever, became yellow in two hours after her death.

The measles prevailed in April, and were of a most inflammatory nature. The weather in May and June was uncommonly wet. The fruit was much injured, and a great deal of hay destroyed by it. On the 14th of June, General Stewart died, with all the usual symptoms of a fatal yellow fever. Several other cases of it, in this and in the succeeding month, proved mortal, but they excited no alarm in the city, as the physicians who attended them called them by other names.

The rain which fell about the middle of July checked this fever. August, September, and October were unusually healthy. A few cases of malignant sore throat appeared in November.

They were, in all the patients that came under my notice, attended with bilious discharges from the stomach and bowels. So little rain fell during the autumnal months, that the wheat perished in many places. The weather in December was extremely cold. The lamps of the city were, in several instances, extinguished by it, on the night of the 23d of the month, at which time the mercury stood at 2° below 0 in the thermometer.

The yellow fever prevailed this year in Charleston, in South-Carolina, where it was produced by putrid exhalations from the cellars of houses which had been lately burnt. It was said by the physicians of that place not to be contagious. The same fever prevailed, at the same time, at Wilmington, in North-Carolina, and at Newburyport, in the state of Massachusetts. In the latter place, it was produced by the exhalation of putrid fish, which had been carelessly thrown upon a wharf.

END OF VOLUME III.